August 1957

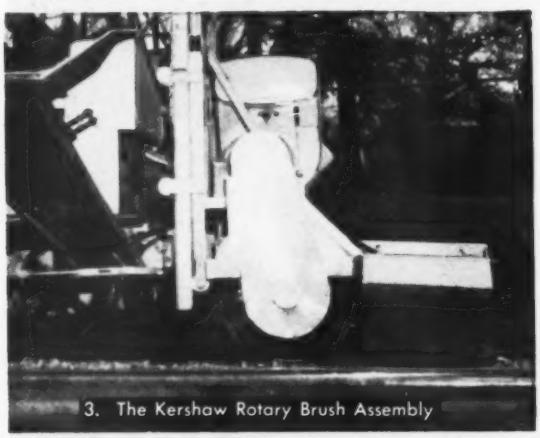
RAILWAY TRACK and STRUCTURES

A Simmons-Boardman TIME-SAVER Publication

TRY THEM...

1. The Kershaw Reversible Wing Assembly

2. The Kershaw Snow Plow



3. The Kershaw Rotary Brush Assembly

4. The Kershaw Road-Crossing Scarifier

You'll BUY Them!

FOR YOUR KERSHAW BALLAST REGULATOR, SCARIFIER AND PLOW

Try these four attachments for your Kershaw Ballast Regulator, Scarifier and Plow! All four solve specific track maintenance problems quickly, easily and economically.

1. The Kershaw Reversible Wing Assembly enables you to regulate ballast in both directions with the machine travelling either forward or backward. The Reversible Wings may be used with any of the other three Regulator attachments.
2. The Kershaw Snow Plow, mounted at the rear of the Ballast Regulator, clears snow from tracks at a rate of four to five miles per hour. Drifts up to 30 inches may be removed by the Regulator with Snow Plow Attachment.
3. The Kershaw Rotary Brush Assembly, mounted on the rear of the Ballast Regulator, may be used in track dressing operations to remove ballast from tops of ties, fill empty cribs and place excess ballast on the ballast shoulder.
4. The Kershaw Road-Crossing Scarifier, mounted on the front of the Ballast Regulator, removes dirt or macadam in road crossings in a matter of minutes.

All four may be attached to or removed from the Ballast Regulator quickly and easily. Try them on your Regulator . . . Or, if yours is one of the few railroads without a Kershaw Ballast Regulator, try the Regulator AND these four attachments on your railroad operating under your track maintenance conditions!

Now . . . more than ever . . .

Recognize This Symbol of Leadership!

KERSHAW
MANUFACTURING CO. INC

MONTGOMERY **ALABAMA**

Model 22 Automatic Switch Stands keep things rolling at Port Richmond

This throat in the Reading's Port Richmond, Philadelphia, yard hums with activity when they're loading a ship or barge with coal. Cars roll smoothly down the ladder track and on to the "barney" which pushes them up to the dumper, with no time out to throw switch-stand levers this way or that.

This is a made-to-order task for Bethlehem's Model 22 Automatic stand, and here you see one of the many that keep things rolling at Port Richmond. This compact little stand was expressly designed for run-through service, and what a job it does!

After the car-wheels have kicked the switch points toward the new position, Model 22's powerful spring mechanism completes the movement and holds the points in the new position. While the target has turned to show the new indication, the throwing lever stays right as it was before the run-through.

Facing-point operations can be handled by throwing the lever, just as with any other stand. This interchangeable feature makes the Model 22 railroading's most verstile switch stand. There's no maintenance problem, either, except for an occasional oiling.

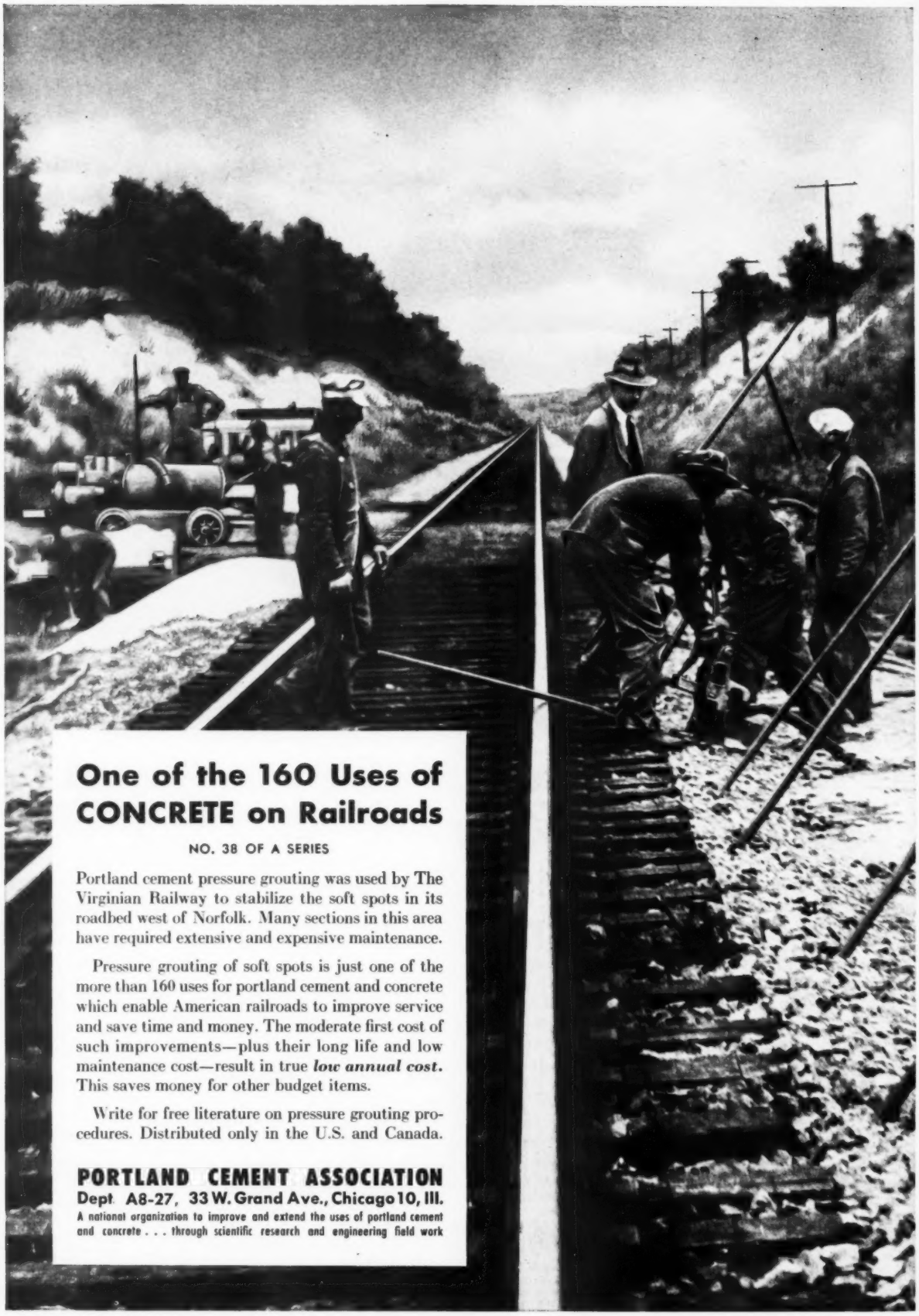
If run-through movements figure in your road's operations, Bethlehem's Model 22 can speed things up, and probably save money too. A Bethlehem engineer will gladly furnish additional information and arrange a demonstration for you. He can be reached through our nearest sales office.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

Published monthly by Simmons-Boardman Publishing Corporation, Newark, New Jersey, with editorial and executive offices at 79 West Monroe Street, Chicago 3, Illinois; 30 Church Street, New York 7, New York. Subscription prices: to railroad employees only in the United States and Possessions, and Canada, one year $2.00. Re-entry of second class mail privileges authorized at Newark, N. J. Volume 53, No. 8.



One of the 160 Uses of CONCRETE on Railroads

NO. 38 OF A SERIES

Portland cement pressure grouting was used by The Virginian Railway to stabilize the soft spots in its roadbed west of Norfolk. Many sections in this area have required extensive and expensive maintenance.

Pressure grouting of soft spots is just one of the more than 160 uses for portland cement and concrete which enable American railroads to improve service and save time and money. The moderate first cost of such improvements—plus their long life and low maintenance cost—result in true ***low annual cost.*** This saves money for other budget items.

Write for free literature on pressure grouting procedures. Distributed only in the U.S. and Canada.

PORTLAND CEMENT ASSOCIATION
Dept. A8-27, 33 W. Grand Ave., Chicago 10, Ill.
A national organization to improve and extend the uses of portland cement and concrete . . . through scientific research and engineering field work

EXTEND LOCOMOTIVE WHEEL LIFE 30% TO 300%!

WITH Nalco TYPE TA FLANGE LUBRICATOR

USING Nalco "MOLY" STICKS

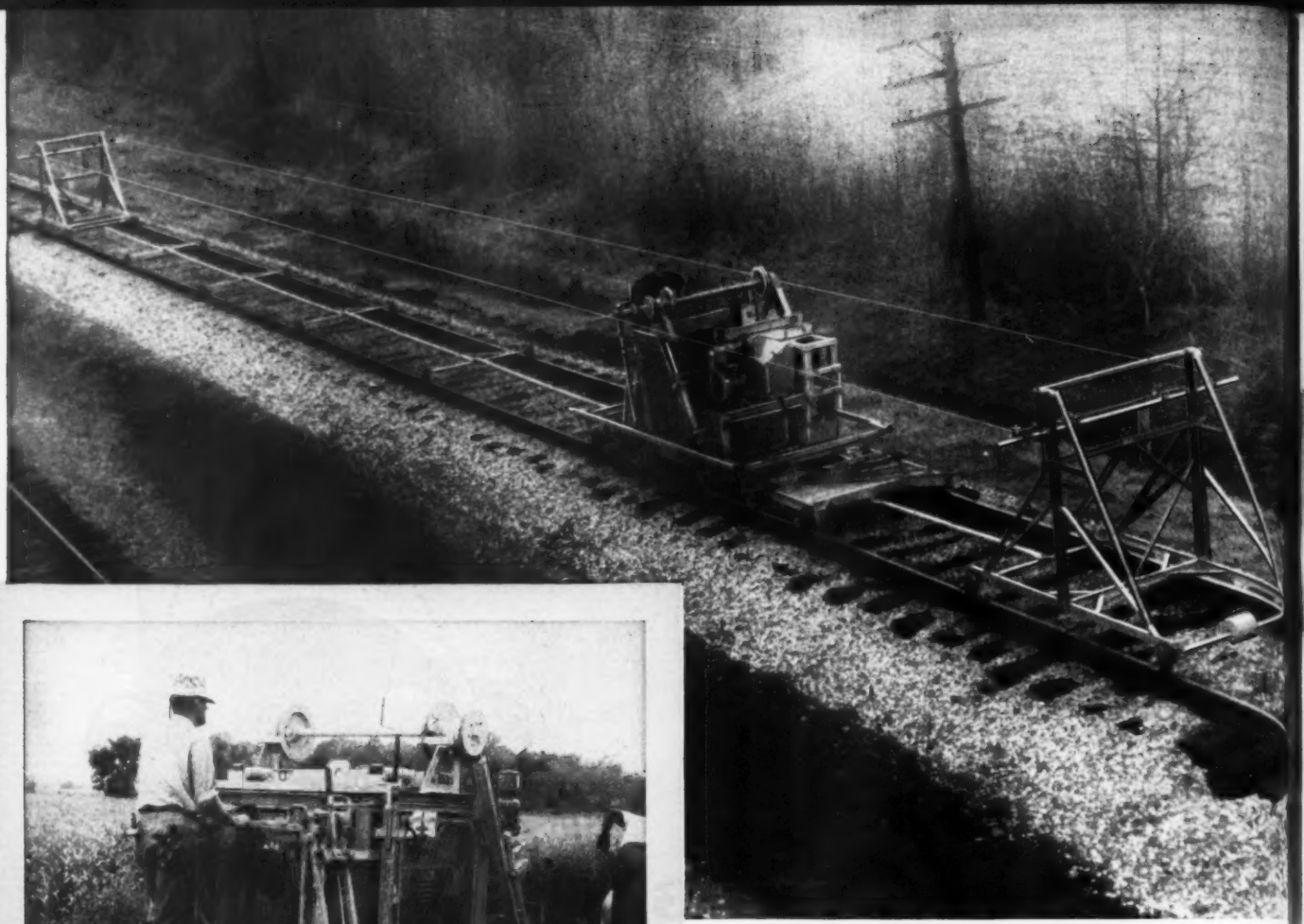
Nalco "Moly" Stick is a highly-efficient *dry* lubricant that maintains a lubricating surface between locomotive wheel flanges and track under extremes of pressure and temperature . . . without *picking up dirt and sand to form a grinding compound.* In new Nalco Type TA Lubricators, "Moly" Sticks provide automatic flange lubrication that has extended wheel life from a substantial 30% to as much—particularly on yard locomotives—as a whopping 300%!

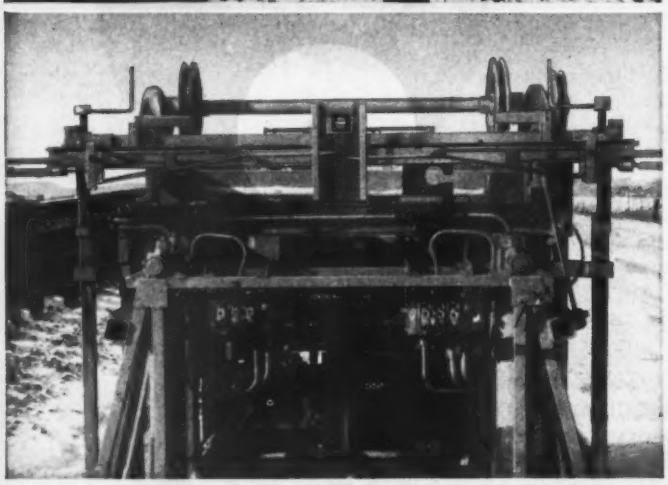
Cost of Nalco Type TA Lubricators and "Moly" Sticks is small. Maintenance is limited to occasional stick replacements. Complete installation of lubricators on a diesel unit can be done by your shop personnel in four hours or less.

Call or write for details on the simplicity and continuing economy of Nalco Flange Lubrication for your locomotives.

NATIONAL ALUMINATE CORPORATION
6195 West 66th Place, Chicago 38, Illinois
POrtsmouth 7-7240
CANADA: Alchem Limited, Burlington, Ontario
ITALY: Nalco Italiana, S.p.A.
WEST GERMANY: Deutsche Nalco-Chemie GmbH
SPAIN: Nalco Espanola, S.A.

Nalco® PRODUCTS . . . SERVING RAILROADS THROUGH PRACTICAL APPLIED SCIENCE





(Above): **Here is the new Nordberg *Trak-Surfacer —Tamping Power Jack team*. The two carriages and the two-wheeled buggies support the Wire that passes on both sides of the Tamping Power Jack, and hold the Wire in tension.**

(Top, left): **Nordberg Tamping Power Jack does the raising and propels itself and the *Trak-Surfacer*.**

(Left): **Pointer and level bubble mounted on Tamping Power Jack (see *circled area*) . . . the aluminum pointers in contact with the Wire show operator when correct raise is reached, and level bubble indicates correct cross level.**

Presenting the new NORDBERG

TRAK-SURFACER

...an entirely new method of raising track

• The Nordberg *Trak-Surfacer* completely eliminates the use of a "Spot-Board" when raising track and, generally also eliminates the necessity for running profiles and setting grade stakes.

The basic principle of the *Trak-Surfacer* is to form a reference line with the top of the Grade Rail through the use of a 125-ft. steel wire. The wire is tightly drawn between two 4-wheel carriages, held apart by a series of 2-wheel buggies.

The Nordberg Tamping Power Jack is used as the central unit in the *Trak-Surfacer —Power Jack team*. It raises the track, tamps the tie to hold the raise and provides propulsion power for itself and the entire *Trak-Surfacer*. The Tamping Power Jack is located so that a cross level mounted on the Jack is 25 feet from the rear support carriage. A pointer, mounted on the cross level directly in front of the Jack operator, shows him when the track is raised correctly.

In operation, the wire adjustment on the front carriage is set for the desired lift. Since the rear buggy is always on raised track, its wire adjustment is held at "zero". The Jack operator raises the Grade Rail until the pointer is at zero indication, and then brings the opposite rail to correct cross level. The tie is then tamped to support the track in this raised position. He then moves to the next jacking location and repeats this operation.

Removal of the *Trak-Surfacer* from track is fast and easy. All sections of the *Trak-Surfacer*, including front and rear buggies, are of aluminum . . . so light that one man can handle any section.

For full details about this newest Nordberg "Mechanical Muscle" , send for a copy of the new TRAK-SURFACER BULLETIN.

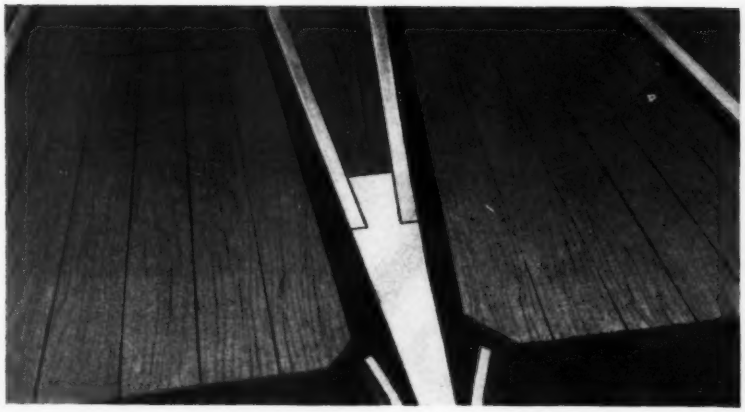
NORDBERG MFG. CO., Milwaukee 1, Wisconsin

R257

Serving
the Nation's Railroads
for over 25 years.

NORDBERG

From crossings . . .



. . . to right-of-way fence posts

. . . to warehouse platform decking

. . . and cattle loading chutes

Clean Penta-treated wood can cut your maintenance costs

Are you taking advantage of *all* the areas where Penta-treated wood can stretch maintenance dollars?

Penta-treated wood's *proved* long-term protection against decay and termite attack make it ideally suited for use in cattle loading bins, equipment sheds, trackside warehouses, right-of-way fencing and walkways, as well as for bridge timbers and crossties.

The economy of 30-year Penta-treated wood from initial installation through maintenance-free service life is reflected in greatly reduced labor time and costs.

The relative cleanliness of Penta-protected wood—the fact that the preservative doesn't ooze out to burn hands or stain clothing or shipments—is a big plus factor with your work crews as well as your customers.

For a factual report on the economies of Penta and Penta protection, write for your copy of "WHAT THEY WILL ASK ABOUT PENTA."

Organic Chemicals Division
MONSANTO CHEMICAL COMPANY
Dept. PI-18A, St. Louis 1, Missouri

MONSANTO®

Safest and Surest...

WESTERN RAIL BENDER

...with Safety Cable

BENDS HEAVY RAIL COLD

Current refinements in the Rail Bender are examples of how WESTERN constantly improves its products to help track men do specific jobs *easier*, *surer*, *safer*.

Tapered Roller TIMKEN BEARING EQUIPPED

Greater speed, easier operation due to minimizing friction and less maintenance are direct, positive advantages of equipping both 25 and 35 ton special journal jacks with Timken roller bearings.

SAFETY CABLE

Made from preformed plow steel, this extra flexible hoisting cable with clamps protects operator from possible injury . . . prevents jack from slipping out of place under strain.

GRADUATED SCALE

Accurate duplication of bends is assured. Scale on jack ram (graduated by ¼") enables operator to match, degree-by-degree, the angle of each set of bends.

Write for Bulletin No. 683G

WESTERN RAILROAD SUPPLY COMPANY

8017

Division of Western Industries, Inc.

2400-2434 S. Ashland Avenue · Chicago 8, Illinois

CANADA: Melville Machinery Co., Ltd., Montreal 3, Que. • T. S. Taylor Machinery Co., Ltd., Winnipeg 12, Man. • Simson-Maxwell, Ltd., Vancouver 5, B. C.

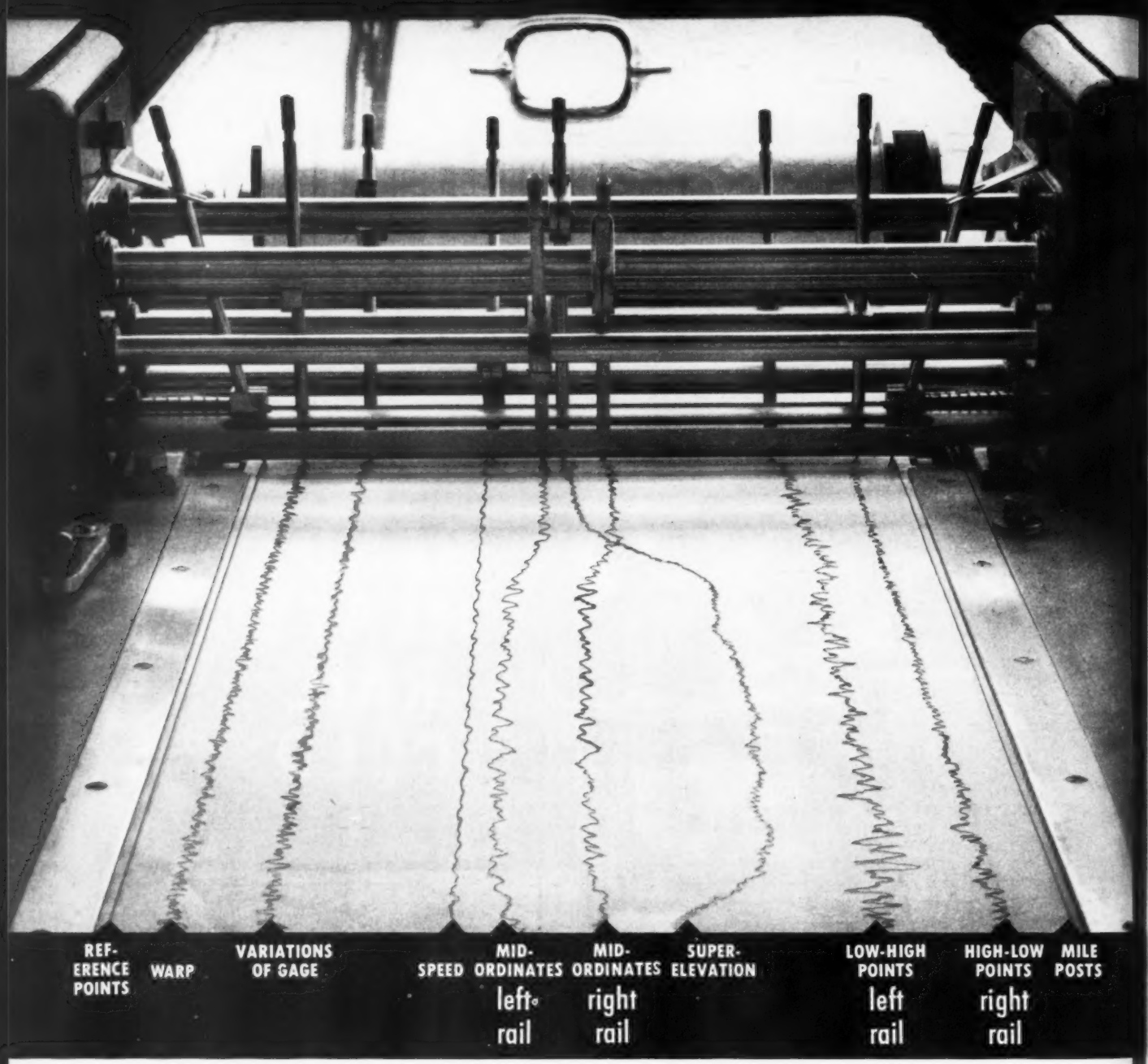


CHART a TRUE COURSE for your TRACK MAINTENANCE forces with a MATISA "TRACK-FAX"® Recording Car

- Ask how to get a FREE TRACK-FAX® chart . . . write to:

Matisa EQUIPMENT CORPORATION

1020 Washington Avenue • Chicago Heights • Illinois

REPRESENTATIVES

Railroad Materials Corporation:
A. W. Boorom, 30 Church St., New York 7
Blair Blowers, Jr., 345 Pattie Drive, Berea, Ohio
R. M. Hitchcock, 1025 Crescent Ave., Macon, Ga.

Frank B. Nugent, 710 Pioneer Bldg., St. Paul 1, Minn.

St. Louis Railway Supply Co., Railway Exchange Bldg., St. Louis 1,

RAILWAY
TRACK and STRUCTURES

News notes...

. . . a resumè of current events throughout the railroad world

The ICC is staffed with good men, but the law requires them to establish rates "and thereby usurp the functions of the market place," said John W. Barriger, president of the P&LE before the recent AAR Mechanical Division meeting. He charged further that "over-regulation of the railroads is the basic cause of their fiscal anemia."

●

The National Safety Council has announced the six Class I railroads named winners of the Railroad Employees' National Safety Award for 1956. They are: Union Pacific; Atlantic Coast Line; Duluth, Missabe & Iron Range; Monon; Charleston & West Virginia; and Texas Mexican.

●

W. Thomas Rice resigned August 1 as president of the Richmond, Fredericksburg & Potomac to accept the presidency of the Atlantic Coast Line thus filling the shoes of Champion McDowell Davis, retired. Wirt P. Marks, Jr., general counsel of the RF&P, moves into the RF&P presidency, succeeding Mr. Rice.

●

Railroads, in meeting together to agree on reduced rates for government shipments, violate anti-trust laws, ruled U. S. District Judge Joseph C. McGarraghy in Washington. The ruling was brought in a suit against 42 major roads by non-scheduled air lines which asked $45 million in triple damages. Hearings on what, if any, damages will be awarded have been postponed. ICC approval of the rates, Judge McGarraghy ruled, did not make the practice immune from anti-trust laws.

●

The National Mediation Board has announced that representatives of the railroads and the Brotherhood of Locomotive Engineers have agreed on a package wage agreement to cover a three-year period. The agreement is similar to that recently accepted by other railroad unions.

●

Fire losses on American railroads—calculated on an average loss per mile basis—rose to a record $48.25 per mile in 1956, according to the AAR. The comparable 1955 figure was $48.10. U. S. and Canadian roads suffered losses in 5,524 fires that cost them $12,913,522 in '56.

●

As this issue went to press, the Association of American Railroads was scheduled to hold a meeting of member roads to amend the Association's plan of organization so as to provide for the position of chairman of the board in addition to the existing position of president of the Association. Rumor had it that the move was being undertaken to allow William T. Faricy to assume the chairmanship, thereby allowing his eventual successor to the presidency to assume that position at once.

News about people

CANADIAN NATIONAL — R. Staffansson, division engineer at Prince Rupert, B.C., has been named structural field engineer at Winnipeg. **J. A. Naylor,** division engineer at Victoria, B.C., succeeds Mr. Staffansson. **N. A. R. Hanks,** assistant engineer at Prince Rupert, has been promoted to assistant division engineer at that location. **D. H. Eckford,** division engineer at Edson, Alta., has been transferred to Victoria, and **M. D. Robb,** assistant division engineer at Edmonton, B.C., has been promoted to division engineer at Edson, succeeding Mr. Eckford. **E. S. Foster,** assistant division engineer of the Smithers division, has been transferred to Edmonton in the same capacity.

CANADIAN PACIFIC—The title of **G. W. Miller,** engineer maintenance of way, at Toronto, Ont., has been changed to regional engineer and the title of **T. W. Creighton,** assistant engineer maintenance of way, has been changed to assistant regional engineer.

CHESAPEAKE & OHIO—K. C. Morriss has been appointed assistant division engineer at Ashland, Ky., succeeding **P. R. Matthews** who has been promoted to division engineer at Richmond, Va., succeeding **R. K. Short.**

DELAWARE & HUDSON—C. E. R. Haight, superintendent of the Pennsylvania-Susquehanna division at Oneonta, N. Y., has been appointed chief engineer at Albany, succeeding **P. O. Ferris,** who retired July 31 after 40 years of service.

FRISCO—C. L. Holdaway, has been appointed roadmaster at Kennett, Mo. The following men have been appointed assistant roadmasters: **R. I. Taylor,** Ft. Smith. Ark.; **E. F. Swope,** Fort Scott, Kan.; **D. C. Gement,** Amory, Miss.

GULF, MOBILE & OHIO—M. D. Carothers, assistant chief engineer, has retired.

MILWAUKEE ROAD—V. E. Glosup, who has been serving as acting chief engineer, has been appointed engineer maintenance of way. **W. G. Powrie** has resumed the position of chief engineer. **D. A. Rieser** has returned to his former position as assistant engineer with duties related to fuel and water service. Somewhat more than a year ago Mr. Rieser left the railroad to become associated with the T. W. Snow Construction Company as executive vice-president and chief engineer.

MISSOURI-KANSAS-TEXAS—J. H. Hughes has been appointed assistant chief engineer at Dallas, Tex., succeeding **A. E. Smith,** who has been appointed bridge engineer, succeeding **G. L. Staley,** who has retired after more than 38 years of service.

PENNSYLVANIA—C. G. Grove, area engineer at Chicago, retired effective July 1, after 45 years of service with the PRR. **K. J. Silvey,** assistant area engineer, becomes area engineer to succeed Mr. Grove.

PITTSBURGH & WEST VIRGINIA—R. S. Anderson, assistant chief engineer maintenance, has been appointed assistant chief engineer at Pittsburgh. **W. K. Kearns** has been named engineer maintenance of way with headquarters at Rook, Pa.

SOUTHERN—Herbert D. Minnis, Jr., track supervisor at Spartanburg, S. C., has been promoted to assistant division engineer at Birmingham, Ala., succeeding **Robert H. Campbell.**

OBITUARY

Leland P. Kimball, engineer of buildings of the Baltimore & Ohio for 33 years before his retirement in 1952, died recently at the age of 69.

Leo D. Garis, retired general bridge inspector for the Chicago & North Western, died July 14.

Biographical briefs

James T. Hunter, who was recently promoted to maintenance engineer on the Missouri-Kansas-Texas at Dallas, Tex. (*RT&S*, April, p. 72), graduated from the University of Missouri in 1952 and joined the MKT in 1945, working summers as a section laborer. In 1952 he served as chairman and rodman at Parsons, Kan. After serving in the Army Corps of Engineers, he was assistant engineer, roadmaster and assistant division engineer—the latter position being the one he held at the time of his recent promotion.

N. H. Williams, recently appointed division engineer on the Delaware & Hudson (*RT&S*, April, p. 66), joined the D&H in 1926. He served successively as track supervisor, bridge and building supervisor and as bridge and building master. He had held the latter position since August 1, 1949.

Lawrence D. Cooper, 36, recently named district material engineer on the New York Central at Indianapolis, Ind. (*RT&S*, May, p.32), graduated from Purdue University and joined the NYC as an assistant engineer at Indianapolis in 1949. He served as bridge inspector at Indianapolis until September 1955 when he was named office engineer at Mattoon, Ill.—the position he held at the time of his recent promotion.

Henry Seitz, 56, who was recently named structural engineer of the Baltimore & Ohio at Baltimore (*RT&S*, June, p. 24), graduated from Baltimore Polytechnic Institute and Johns Hopkins University and joined the B&O in February 1920 as a bridge draftsman and designer. He subsequently served as assistant engineer and designing engineer of bridges and buildings prior to his recent promotion.

Gurney H. Dayett, Sr., 70, who recently retired as assistant to chief engineer of the Baltimore & Ohio at Baltimore, Md. (*RT&S*, June, p. 24), graduated from Lehigh University and joined the B&O in February 1922. He was named chief draftsman in the bridge department in November 1929 and in March 1934 was appointed designing engineer. On January 1, 1940, he was named assistant engineer of bridges and on March 1, 1955, was named assistant to chief engineer at Baltimore.

A. Norman Laird, 65, who recently retired as chief engineer of the Grand Trunk Western (*RT&S*, June, p. 24), received his bachelor's and master's degrees in civil engineering from the University of Mich-

(*Continued on page* 56)

James T. Hunter
M-K-T

N. H. Williams
D&H

Lawrence D. Cooper
NYC

Henry Seitz
B&O

Gurney H. Dayett
B&O

A. Norman Laird
GTW

Look!
No weeds.

Weed Control is no chore...when you use new

EFFECTIVE...ECONOMICAL

UREABOR®

WEED and GRASS KILLER

Applications of UREABOR are almost effortless

NOTHING TO MIX — NO WATER TO HAUL

There's no easier way to end weeds for a season or longer! That's why UREABOR has been such an instantaneous success with all types of industry. You, too, will want the effective and lasting destruction of plant-life offered by this newest addition to our line of nonselective herbicides.

UREABOR is a granular urea-borate combination in dust-free form for fast, easy application at low rates. This chemical destroys weeds and grasses through their root systems. Its residual action, preventing regrowth for long periods, helps hold man-hours for "grassing" to a minimum.

UREABOR has desirable features. It's concentrated, nonflammable, and nonpoisonous when used as directed. Easy to apply—just a man with a special PCB Spreader can be effective anywhere.

Write today for literature!

Dry application—like this—destroys weeds and grass...prevents regrowth for a season, or longer!

Special Spreader now available for fast, easy application...

The PCB Spreader applies UREABOR to best advantage, at prescribed low rates. It holds enough UREABOR to treat 1250 to 2500 sq. ft. without refilling—weighs a mere 6 lbs. Available now for just $10.75 delivered—anywhere in the U.S.A.

AGRICULTURAL SALES DEPARTMENT

United States Borax & Chemical Corporation

PACIFIC COAST BORAX COMPANY DIVISION

630 SHATTO PLACE, LOS ANGELES 5, CALIFORNIA

NOW YOU CAN PLOW ON DOUBLE TRACK . . . . . like the

CHICAGO AND NORTH WESTERN SYSTEM

Front end view of Double Track Plow. Note that plow blades move in one direction only.

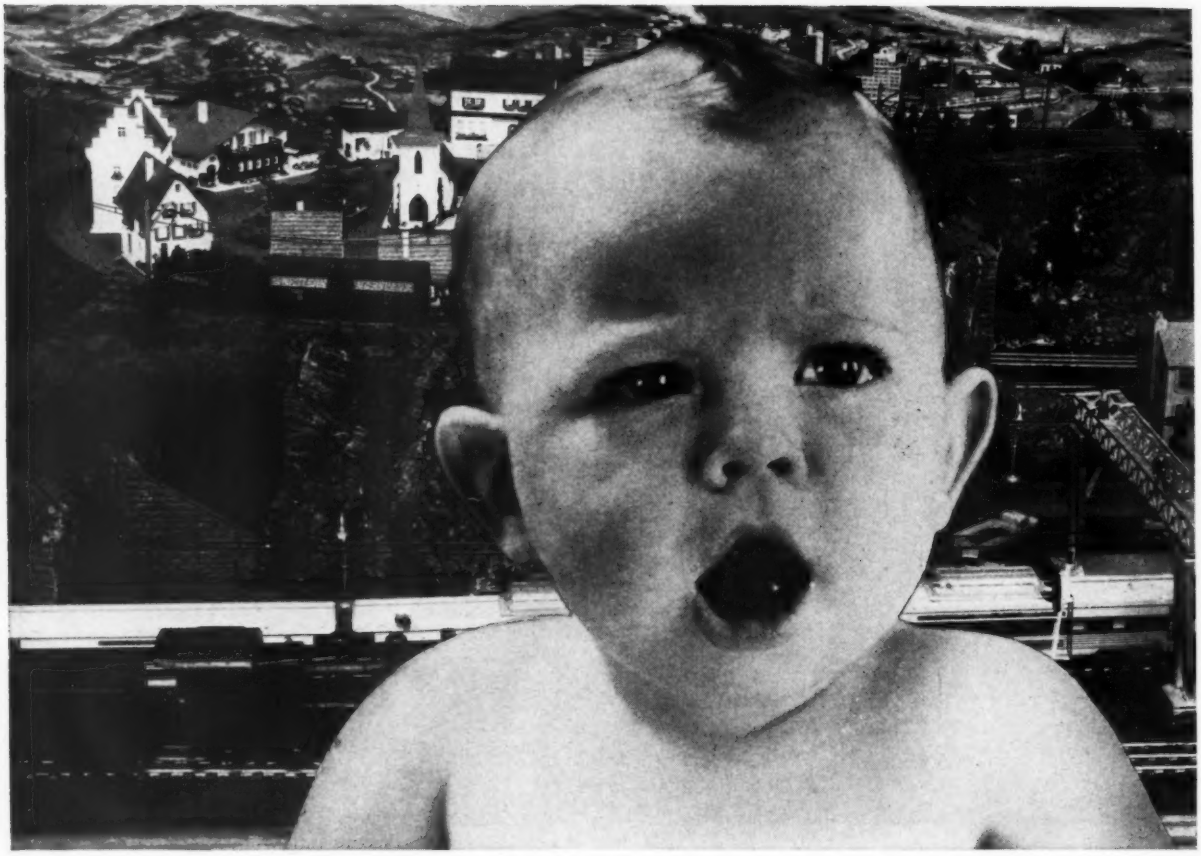
Plow in position under the track. The jacks holding the track will be removed.

Double Track Plow in operation. All the foul ballast is carried to the outside shoulder by the "one way" blades.

Now the MANNIX PLOW has been still further developed to plow on double track. 3,159 feet of track cribbed in less than two hours . . . that's just one example of the way it saves money for the Chicago and North Western! Today, send for details of the MANNIX Plow-and-Sled method of track maintenance. Ask about the contract plan available for the use of this patented equipment.

MANNIX INTERNATIONAL INC.

4020 Minnetonka Boulevard, Minneapolis 16, Minnesota
Phone: WAlnut 7-9411



"You Mean Bird Self-Sealing Tie Pads Can Reduce My Cross Tie Costs 59%?"

Oh baby! That's a *real* saving. And it's as easy as ABC to prove for yourself:

A. The average installed cost of a new main line cross tie, including cost of original tie plus labor, is approximately $7.00*. With a normal life of 20 years, this amounts to 35¢ per year.

B. By sealing out destructive moisture and abrasive materials from under-plate and spike-hole areas, Bird Self-Sealing Tie Pads increase the life of the average tie by at least 15 years. At 35¢ per year, this saving amounts to $5.25.

C. The cost of obtaining this saving? About $1.12 for two five-ply 7¾" x 13" Bird Self-Sealing Tie Pads. *Net saving is $4.13 — or 59% of the installed cost of the original tie.*

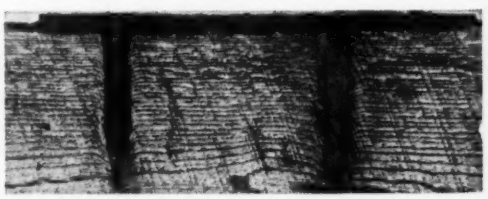
Bird Self-Sealing Tie Pads are the *only* tie pads which have *proved* their durable and effective seal with the tie through years of in-track service. Want the whole story? Write to Bird Tie Pads, Department HTS, East Walpole, Massachusetts.

*These figures represent the most conservative minimum. If your costs are higher, savings are proportionately higher.

Bird Self-Sealing Tie Pads Are Recommended For:

Bridge Decks • Curves • Switch Timbers • Highway Grade Crossings and Other Paved Areas • Crossing Frogs • Insulating Joints • With Smaller Tie Plates • Pile Cutoffs • Through Station Platforms • Out-of-Face Installations in Rail-Laying Programs • Locations where tie life is short or replacement costs are high.

Buy the Best... **BIRD & SON, inc.** Established 1795 *Buy BIRD*



Unretouched photograph of cross section of tie shows under-plate and spike-hole area after 10 years' protection by Bird Self-Sealing Tie Pads. Destructive moisture and abrasive materials could not penetrate the seal.

RAILWAY
TRACK and STRUCTURES

Dear reader:

On getting off the treadmill

A top maintenance officer was describing a plan that was being put into effect on his road—a large one—for reorganizing the M/W forces on a comprehensive basis. It was apparent that the plan, when fully effective, would result in a large reduction in labor requirements.

A listener suggested that the railroad stood to save a lot of money from the plan. "You might think so," replied the maintenance man with a wry smile, "but with wages going up all the time, the most we can hope to do is to get our house in order so that we can maintain the property adequately without spending more money."

This conversation illustrates the dilemma of the railway M/W man today. That dilemma arises from a recurring cycle of events that starts with each new increase in wages. This results in pressure from above to keep costs under control. Your maintenance man then struggles valiantly to follow instructions and eventually may have the satisfaction of seeing his efforts bear fruit. But then comes another hike in wages and the cycle starts all over again.

Part of the dilemma stems from the fact that maintenance men dare not allow the condition of their properties to deteriorate, at least to any great extent. While the volume of business carried has been something less than satisfactory so far this year, it still remains at a relatively high level. Thus, the wear and tear continues, and standards must be maintained, which means that the time-honored method of controlling expenses simply by cutting down on the amount of work done has even less to offer as a solution than ever before.

Any discussion of this problem must take into account the fact that the wage spiral seems to have become established as a permanent aspect of the economy. With this fact in mind it immediately becomes evident that a piecemeal approach to the problem of cost control is anything but satisfactory. Improvisation will not work. Those who use this approach are like the boy trying to plug holes in a dike. They have lost the initiative and are at the mercy of events beyond their control.

The first requisite if a measure of control is to be regained over the situation is to face up to the permanent long-range nature of the problem. Once this has been done the road ahead becomes fairly distinct. Many companies have already set their feet upon it. They have perceived that the occasion requires an entirely new approach to the problem of property maintenance. They have seen that timidity, vacillation and procrastination must be replaced by a policy of bold action based on original thinking.

They have also seen that whatever is done today in the way of reorientation of forces and methods must be integrated into a long-range policy that is flexible enough to permit full advantage to be taken of future developments in machinery.

Many maintenance men now have a feeling of being on a treadmill fashioned by the cycle of wage increases. They can do much to banish that feeling by making a resolute attempt to take the initiative into their own hands. MHD

You have a 3 to 1

ADVANTAGE IN LIGHT CONSTRUCTION AND MAINTENANCE

Elgin, Joliet and Eastern Railway Co. takes advantage of Model D motor grader economy around their railroad.

...with an Allis-Chalmers Model D

Compare an Allis-Chalmers Model D motor grader with any large grader. You will find it has all the essential big-grader, earth-moving features . . . ground-gripping tandem drive, work-boosting ROLL-AWAY moldboard, easy-to-operate hydraulic power controls and high axle clearance.

Then compare price! You'll find you can own *three* of these versatile motor graders for the price of one large grader.

You can have three machines working at the same time . . . maintaining yards, cutting and cleaning ditches, spreading ballast, handling many other light construction jobs. You can maintain three times as many miles of right-of-way.

And, finally, a number of special attachments gives the Model D a multitude of uses beyond that of other graders. Rear-mounted, $\frac{5}{8}$-cu yd loader handles gravel, cinders and other bulk materials . . . often eliminates need for a specialized machine. Work-boosting accessories include hydraulic scarifier, power circle turn, and front wheel lean.

See your Allis-Chalmers dealer . . . let his railroad representative demonstrate the Model D on your job.

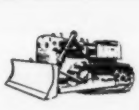
You'll find just the right machine in Allis-Chalmers' complete line of advanced-design construction machinery. There's a model for every application . . . a size for every job.

ROLL-AWAY is an Allis-Chalmers trademark.

TRANSPORTATION SALES DEPARTMENT, TRACTOR GROUP, MILWAUKEE 1, WISCONSIN

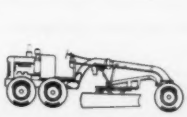
ALLIS-CHALMERS

Crawler Tractors — 2 drawbar to 204 net engine hp



4 Tractor Shovels — 1½ to 4-cu yd standard bucket

2 Motor Scrapers — 14 and 20 cu yd (heaped)
2 Motor Wagons



2 Motor Graders — 120-brake hp Model Forty Five, 50-brake hp Model D

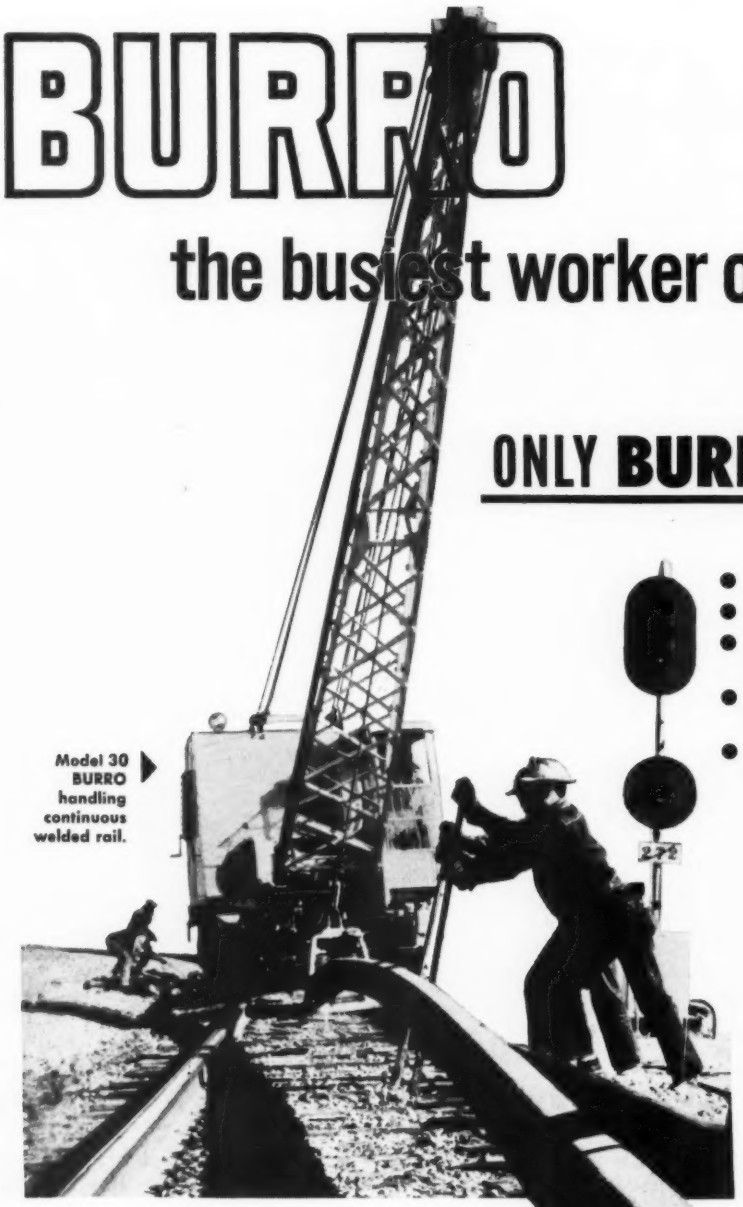
Fork Lift Trucks — Capacities 2,000 to 8,000 lb

3 Wheel Tractors and attachments — 22.8 to 45.3 belt hp

Engines and Generating Sets

BURRO

the busiest worker on the track

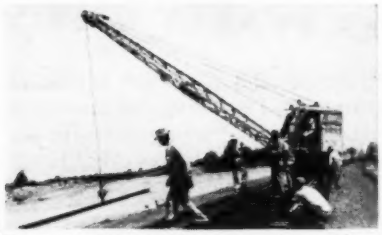


Model 30 BURRO handling continuous welded rail.

ONLY BURRO CRANES HAVE ALL THESE ADVANTAGES:

- Fast travel speeds . . . up to 28 MPH
- Draw bar pull in excess of 9000 lbs.
- Elevated Boom Heels for working over high sided gondolas
- Short tail swing—will not foul adjoining track
- Low overall height. BURRO can be loaded and worked on a standard flatcar.

Model 30 BURRO stockpiling rail at welding site.

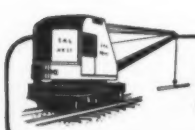


New track construction with a Model 30 BURRO is a fast, efficient operation.

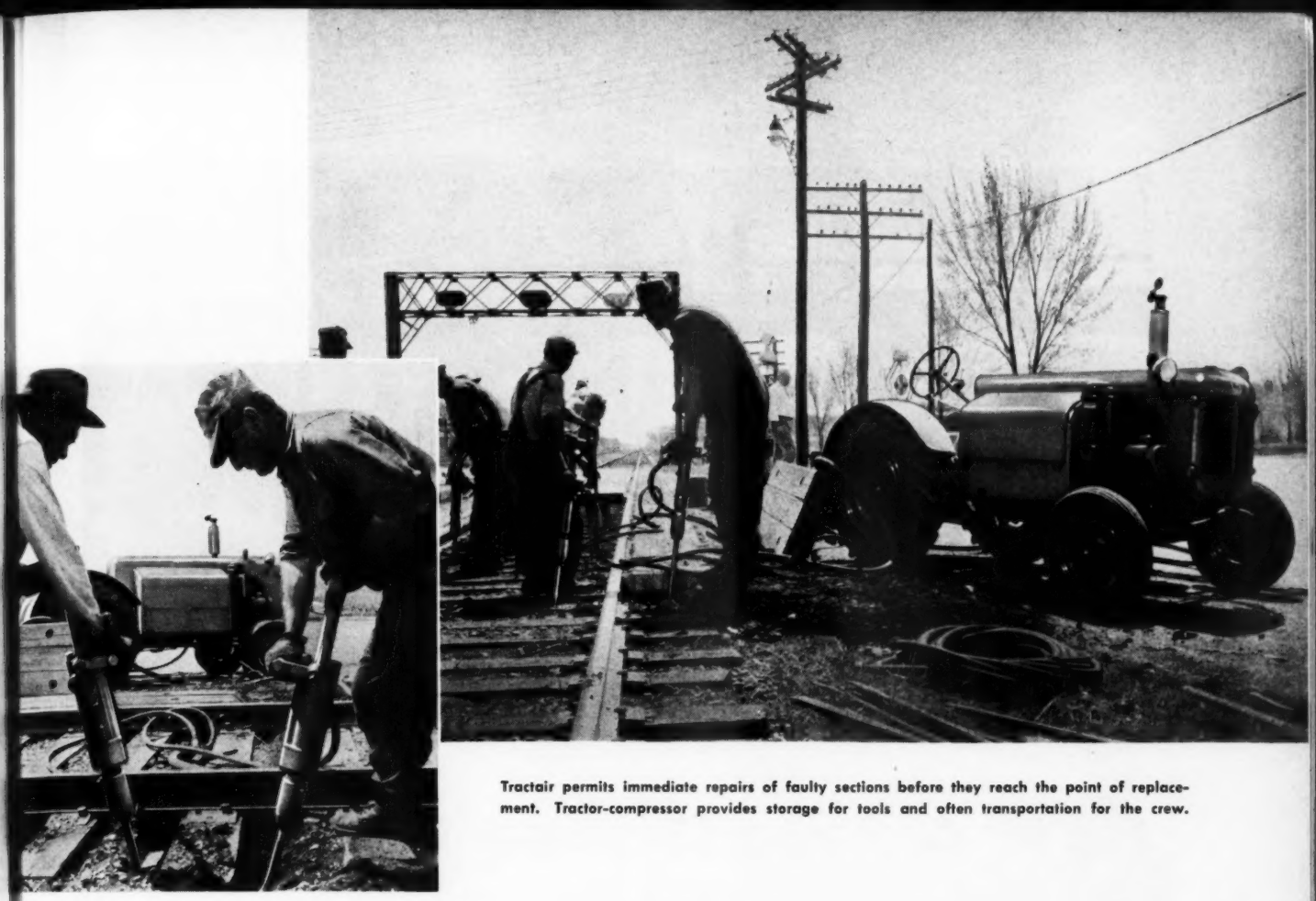
Trackwork—a BURRO Crane specialty, is just one of countless jobs these fast, powerful workhorse units are doing on the railroad today.

Pound for pound, there's more work power and versatility built into BURRO Cranes than any other unit. A BURRO takes any job in stride. In the yard or on the line, it is unequalled for speed and economical performance.

BURRO Cranes are made in three models—Model 15A, Model 30, and the larger Model 40. BURRO Crane catalogs have the full story on these time and money-saving machines. Write for them.



CULLEN-FRIESTEDT CO.
1301 SOUTH KILBOURN AVENUE • CHICAGO 23, ILLINOIS



Tractair permits immediate repairs of faulty sections before they reach the point of replacement. Tractor-compressor provides storage for tools and often transportation for the crew.

Tractair* Doubles Track-Upkeep Efficiency

Self-propelled tractor-compressor travels on road or tracks to jobs at crossings or at "inaccessible" bridges.

Multi-purpose unit provides maximum "on-the-job" power for air tools — eliminates delays and long hose lines.

A leading railroad credits the Le Roi Tractair 125 and C10T tie tampers with doubling tamping efficiency around frogs and switches in restricted "off-the-highway" areas.

The company's superintendent of maintenance explains that Tractair's mobility brings air supply to any point along the line . . . permits track repairs without interfering with yard or right-of-way traffic. This easy mobility also eliminates costly handling of heavy stationary compressors — an expense that often discouraged minor repairs that would have extended the life of ties under heavy traffic.

Gets Close to Job

"With the Tractair, we can drive up to the repair or maintenance point on the highway, put the unit on the tracks by lowering the retractable guide wheels, and get right up to the point on the line where the job must be done," the superintendent reports. "We eliminate stringing compressor lines as much as 150 to 200 ft. to the job, and the consequent loss of 3 to 7 lbs. of air pressure for every 50 ft. of compressor line.

"The 3 in. blade of the C10T permits full-power tamping, even in those tight corners around switch points — places that are normally hard to reach, but where maintenance is needed most."

The tool's high-speed impact often permits tamping directly on the original bed, without jacking up the rails. The superintendent adds that a Tractair with four tampers does the work of a stationary unit using six 800-blows-per-minute tampers, and eliminates the need for a jacking crew at most points. What's more, the men themselves prefer the lightweight, shock-proof C10T because it's less fatiguing than conventional tampers.

Uses 30 Tractairs

The superintendent states that this Le Roi combination "is best for our requirements" in maintaining the many points that need frequent servicing—and hundreds of other related jobs. "At present, we have more than 30 Tractairs at work on the road, and envision further increases in the future." Tractair can do the same for you. Write us today for complete information and data.

*"Tractair" is the registered trademark for Le Roi's combination tractor-air compressor.

WARCO

LE ROI Division of Westinghouse Air Brake Co., Milwaukee 1, Wisconsin, manufacturers of Newmatic air tools, Tractair,® portable and stationary air compressors, and heavy-duty industrial engines. Write us for information on any of these products.

Armco Bridge Plank made it easy to renew this overpass on the Soo Line.

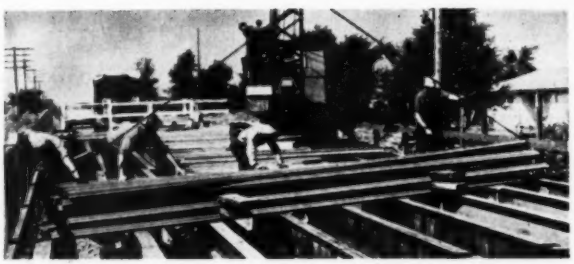
How Armco Bridge Plank
Stops Costly Overpass Maintenance...Once and For All

1. Armco Bridge Plank Assures Safe Strength
Corrugated metal design assures efficient, long-lasting strength in floors for new or old bridges. You simply specify the gage that meets your loading requirements and stringer spacing.

2. Armco Bridge Plank Stiffens Entire Structure
With positive welded connections, the new floor becomes an integral part of the structure. No loose members to rattle or damage the surface.

3. Armco Bridge Plank is Durable
Paving jobs on Armco Metal Bridge Plank last longer because there is nothing to crack, warp or rot. The danger of fire is minimized, too.

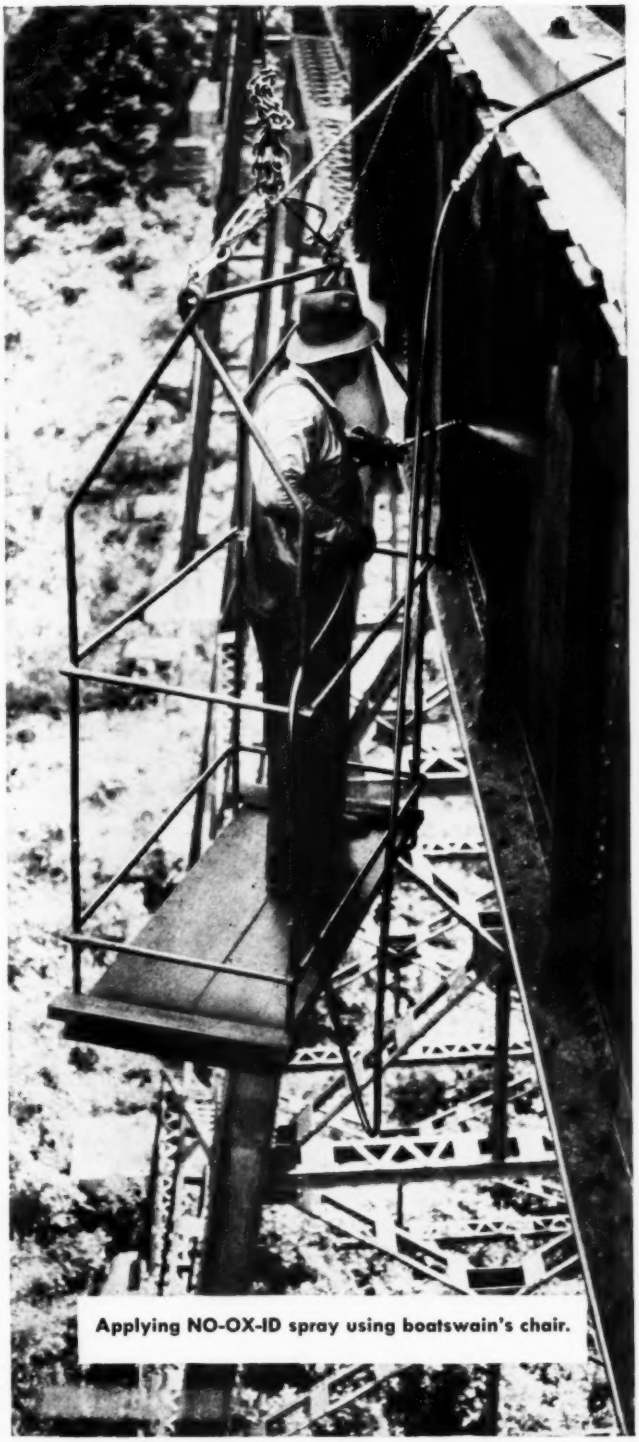
Write us today for complete data on Armco Bridge Plank. Armco Drainage & Metal Products, Inc., 5327 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.



Planks were delivered to fit the width of the overpass. No field cutting or splicing was necessary.

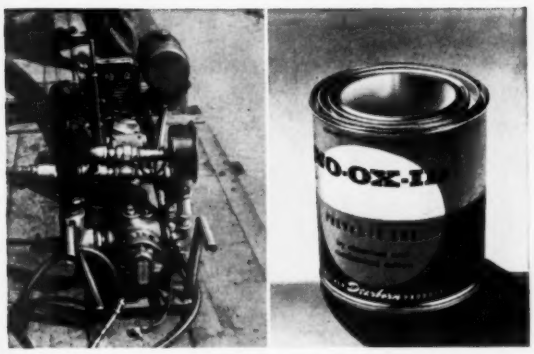
The finished job provides a smooth, silent traffic surface. Vibrations and rattles were eliminated.

Armco Corrugated Metal Bridge Plank



Applying NO-OX-ID spray using boatswain's chair.

NO-OX-ID SPRAY METHOD SAVES MONEY ON BRIDGE PROTECTION FOR MANY MAJOR RAILROADS...



On-the-job spray equipment delivers NO-OX-ID direct from drum to sprayer. There is a NO-OX-ID consistency for every bridge spraying job.

Costly, time-consuming bridge painting programs are rapidly being replaced by the NO-OX-ID Spray Method. Procedure is simple. (1) Remove dirt and loose rust. (2) Spray steel surface with one coat of NO-OX-ID. Result: effective, economical, long-term protection.

REASONS FOR THE SWING TO NO-OX-ID

- Labor costs reduced...fewer bridge gangs needed
- Less scaffolding required
- Reduced steel preparation time
- One coat gives long-term protection

Dearborn has served railroads since 1887 with NO-OX-ID rust preventives, water treatment, cleaners and detergents.

FOR LONG TERM PROTECTION

Dearborn® NO-OX-ID

Dearborn Chemical Company
Merchandise Mart Plaza, Dept. RTS
Chicago 54, Ill.

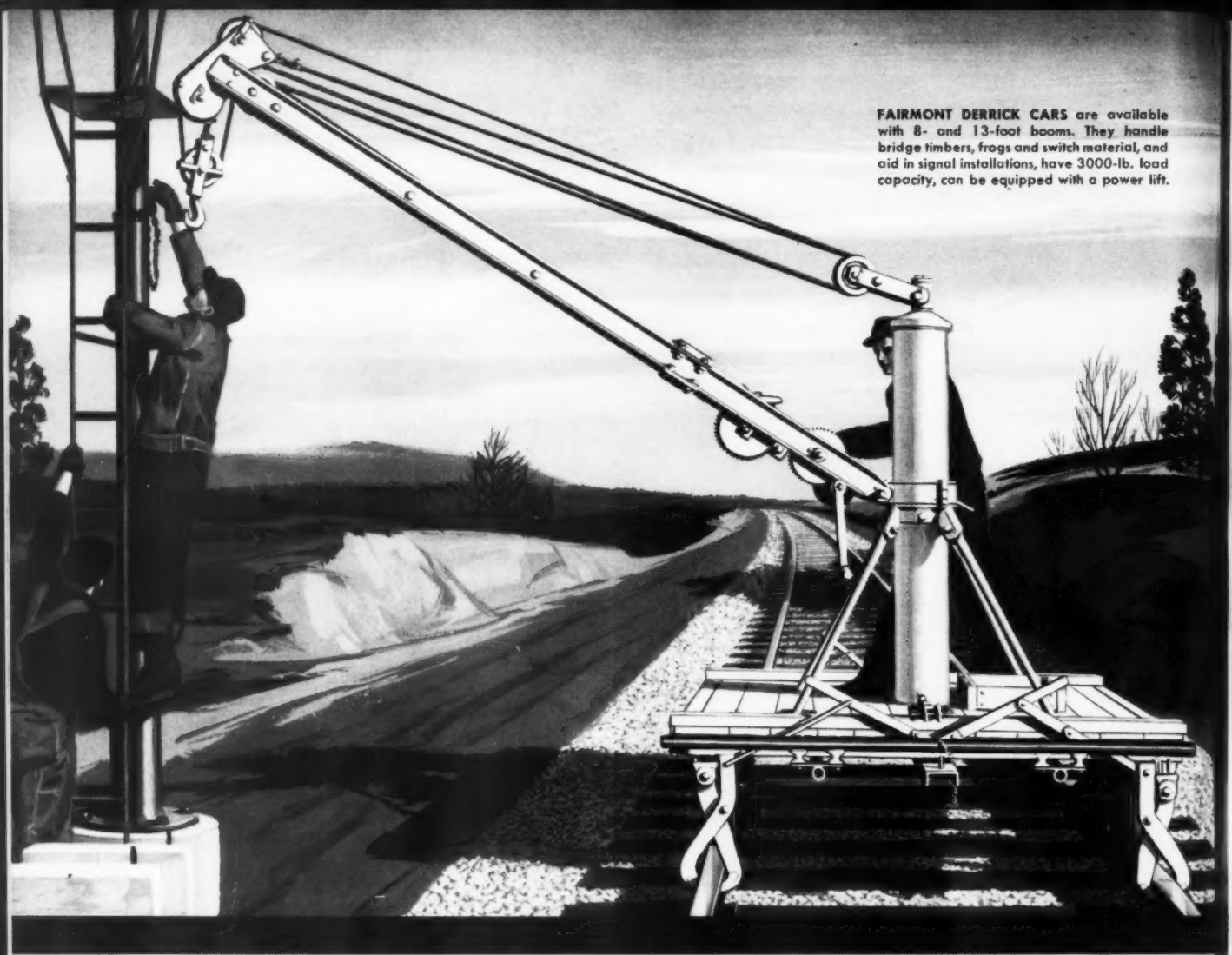
Please send me full information on the NO-OX-ID Bridge Spraying Method.

Name.....*Title*.....

Railroad.....

Address.....

City.....*Zone*.....*State*.....



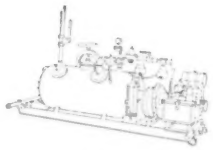
FAIRMONT DERRICK CARS are available with 8- and 13-foot booms. They handle bridge timbers, frogs and switch material, and aid in signal installations, have 3000-lb. load capacity, can be equipped with a power lift.

When you think of
EFFICIENT OPERATION

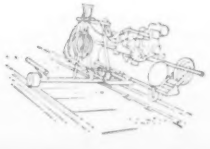
. . . think first of **Fairmont**

W61 SERIES B OIL SPRAYER has 70-gallon tank. Sprays heated oil on angle bars and between angle bar and rail to eliminate frozen joints, lubricates switches. Needs only a three-man crew for operation.

W65 SERIES A GROUTING OUTFIT is complete, compact, simple and portable. Used principally for roadbed stabilization to eliminate slow orders, it is also adaptable to large or small programs.



W72 SERIES A OIL SPRAYER with 30-gallon tank is easily removed from track by three-man crew. Sprays heated oil to outside and back of angle bars to fully eliminate the possibility of frozen joints.



Fairmont railway equipment is designed and built with but one objective—to increase railroading efficiency by saving time and money on the job. The units shown here are excellent examples of the type of equipment Fairmont has created to increase the daily work output of your men on three important tasks: bridge repair and material handling, roadbed stabilization, and rail joint maintenance. Like all Fairmont products, they are soundly engineered and quality constructed to raise the efficiency of your maintenance operations.

FAIRMONT RAILWAY MOTORS, INC., FAIRMONT, MINN.

MANUFACTURERS OF BALLAST MAINTENANCE CARS, DERRICK CARS, OIL SPRAY CARS, GROUTING OUTFITS, TIE RENEWAL EQUIPMENT, RAIL RENEWAL EQUIPMENT, WEED CONTROL EQUIPMENT, HY-RAIL CARS, TRACK MOTOR CARS, PUSH CARS AND TRAILERS.

RAILWAY

TRACK and STRUCTURES

Published monthly by the

SIMMONS-BOARDMAN PUBLISHING CORPORATION

●

Executive Offices
30 Church St., New York 7

Editorial Offices
79 W. Monroe St., Chicago 3

ROBERT G. LEWIS.....Publisher
MERWIN H. DICK.....Editor
R. E. DOVE.....Associate Editor
R. M. SCHMIDL.....Associate Editor
LILLIAN L. WATERS...Editorial Assistant

●

James G. Lyne, *President*, Samuel O. Dunn, *Chairman Emeritus*, Fred A. Clark, *Vice-President and Secretary*, Harry H. Melville, C. W. Merriken, John R. Thompson, John S. Vreeland, Robert G. Lewis, M. H. Dick, *Vice-Presidents*. Arthur J. McGinnis, *Executive Vice-President and Treasurer*. Duane C. Salisbury, *Vice-President and Director of Railway Sales*. Michael J. Figa, *Director of Production*. John Gavora, Jr., *Assistant Treasurer*.

●

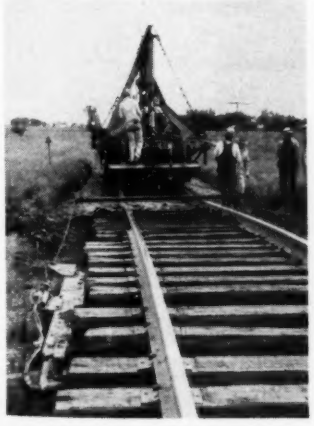
Branch offices: 1081 National Press Bldg., Washington 4, D.C.; Terminal Tower, Cleveland 13; 214 Terminal Sales Bldg., Portland 5, Ore.; 244 California St., San Francisco 4; 1151 W. 6th St., Los Angeles 17; 3908 Lemmon Ave., Dallas 19, Tex. Foreign representatives: Sibley-Field Publishing Co., Ltd., 103 Newgate St., London E.C. 1, England; Georg J. Linder, continental European representative, (16) Frankfurt a.Main, Wittlesbacher Allee 60, West Germany.

●

Subscription price to railroad employees only in the U.S., U.S. possessions and Canada, $2.00 one year, $3 two years, payable in advance and postage free. All other countries, $8 one year, $16 two years. Single copies 50c. Address correspondence concerning subscriptions to R. C. VanNess, director of circulation, 30 Church St., New York 7.

●

Member of the Associated Business Papers (ABP) and of the Audit Bureau of Circulations (ABC) and is indexed by Engineering Index, Inc.



in this issue:

vol. 53, no. 8 AUGUST, 1957

PROGRESS on the RF&P

DEPARTMENTS

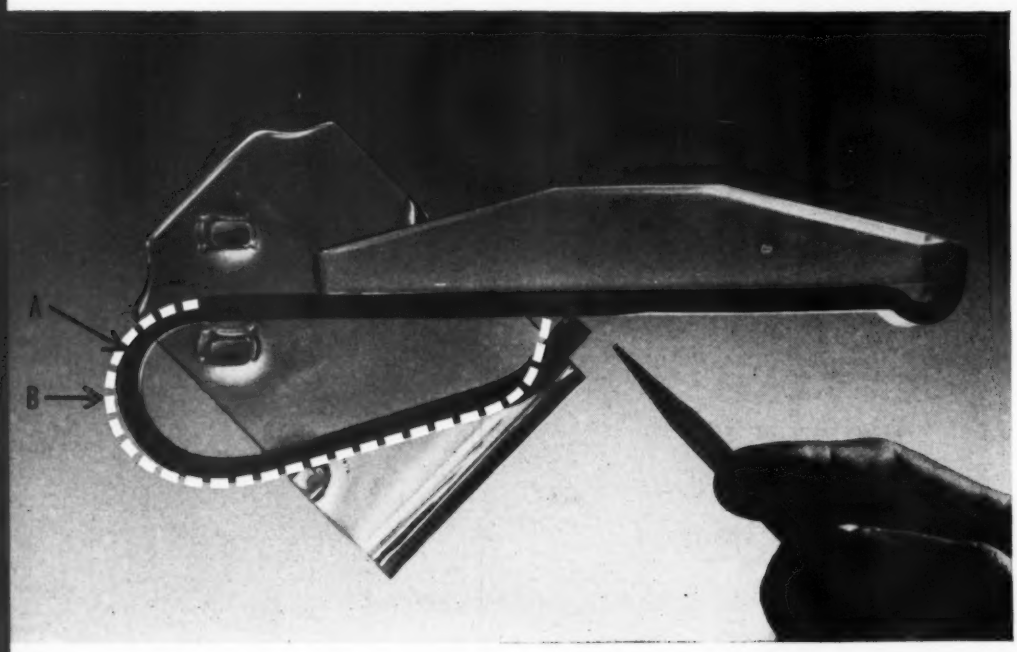
DON'T MISS . . .

Read how the Rock Island is getting better results with an undertrack sled because of recent improvements in the device, including hydraulic controls for the rear flaps.

. . . in the September issue

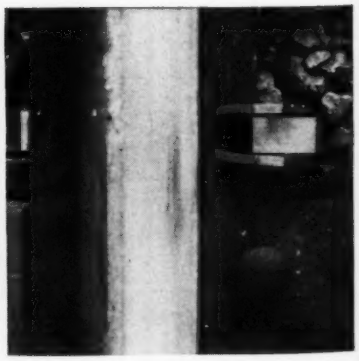
Bulldog Rail Anchors give you positive anticreep protection

ON ANY RAIL, welded or conventional, positive anticreep protection calls for an adequate number of anchors with high holding power. And economical installation calls for anchors that are fast and easy to apply. You get this combination of high power and easy application with True Temper's improved BULLDOG Rail Anchors.



APPLICATION IS EASY, with only one or two hammer blows needed to install new BULLDOG anchors. Time and effort is cut in half. Transparent model shows how loop in the spring has been flattened to raise the point (A) where hammer strikes the spring. This results in a straighter, more direct path between striking point and end of the spring which engages the rail flange. Old design (dotted line) allowed much of the striking force (B) to travel down and around the wider loop. New design allows the spring to move with less friction, is angled to ride over clamp base (at point indicated by pencil) to minimize "pop back" during installation.

HIGH HOLDING POWER comes from BULLDOG'S two-way compression grip and the great tension of the spring—holding power is 25% greater than on previous anchor. Side view shows how broad, flat tie-bearing surface transmits load over a wide area. Top view shows that the anchor does not bear on the tie plate—cannot loosen the plate and does not disturb the spike. True Temper Corporation, 1623 Euclid Avenue, Cleveland 15, O.



OTHER TRUE TEMPER RAILWAY PRODUCTS: BULLDOG Ballast Forks, Weed Cutters • BULLDOG Shovels • BULLDOG Safety Rail Forks, Hammers, Sledges • BULLDOG Scythes

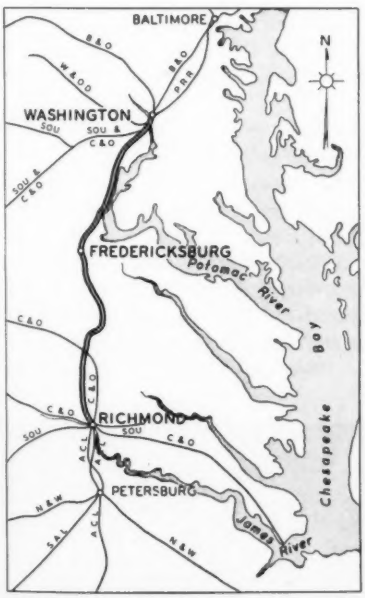
TRUE TEMPER BULLDOG RAIL ANCHORS YOU CAN LOOK TO TT FOR LEADERSHIP

PROGRESS on the RF&P . . .

Standards up but costs go down

Traffic density on the Richmond, Fredericksburg & Potomac is relatively high. For this reason it has been difficult at times to obtain enough time between trains in which to maintain its tracks. This situation was especially true during World War II, when trains averaged one about every 13 min. As a result the condition of the tracks suffered some deterioration.

Drastic measures were necessary to rehabilitate the property while at the same time keeping costs down. This article describes how the reorganization of its M/W forces, the adoption of new track-maintenance methods, and inter-departmental cooperation, combined to permit the RF&P to rebuild its property to its present excellent condition while actually reducing costs.



THE RF&P is a "bridge" road connecting railroads operating into Washington, D.C., from the north with those operating south of Richmond, Va. It is a 110-mile double-tracked road with a high traffic density.

● Most New York-to-Miami train passengers are unaware of their ride over the tracks of the Richmond, Fredericksburg & Potomac. This is not surprising because the distance they ride on the RF&P (from the Potomac river at Washington, D.C., to Richmond, Va.) is only about 110 miles, or one-tenth of their total journey.

But this 110-mile stretch is the life blood of the RF&P, which is an overhead railroad serving as a bridge between the Atlantic Seaboard railroads operating into Washington from the north and those operating south of Richmond. The RF&P is double-tracked for this entire distance and some portions have three and four main tracks. This trackage, together with 8 miles of branch line, gives the track department 249.6 miles of main track to maintain, along with about 214 miles of side track.

Today's passengers have a smooth ride over this railroad at 80 mph. The track was not always this smooth, especially during World War II, and its present good condition is the result of several years' of hard effort in rehabilitating the properties.

An extensive reorganization of its maintenance-of-way forces has been one of the factors contributing to the present healthy condition of the RF&P's fixed properties. This reorganization has taken place since World War II, and more particularly during the last five years.

World War II took a heavy toll of the tracks of the RF&P as there was scarcely another road in the country which had the traffic density of that road. Trains operated at the rate of one every 13 or 14 min. It was not unusual for the section crews to wait 1½ hr before they could place their motor cars on the rails to go six miles to work. Then, equipped mostly with hand tools, they had little time between trains to work efficiently on the track. They were further hampered

ABOUT one-third of the track tamping done each year is performed by the section forces using air guns powered by Tractairs.

SECTIONS each have a stake-body truck for transportation to and from the job.

Stabilized force consists of section crews and

by lack of materials and a shortage of experienced men. The result was that, by 1946, despite the employment of 18 section crews on the main track and 2 more in Potomac yard, the tracks were in a run-down condition, with train speeds on some sections north of Richmond being restricted to 40 mph.

Very little track machinery was in use on the road in 1946. Rail was laid by hand, except for two spike pullers. Later, tie adzers and spike drivers were added to the rail-laying equipment, followed by an American ditcher for laying the ralls. Ballasting and timbering was carried out by extra gangs with the assistance of a crawler-type air compressor and hand-held tampers.

Bridge and building work was, for the most part, also done by hand. Most of the bridge structures on this road are of the permanent type; there are no timber trestles, although some bridges have pile foundations with steel superstructure. The RF&P has a large number of culverts, some of which are stone boxes and stone arches built in 1836. Others are brick-arch culverts, concrete boxes and cast-iron pipes. Some of these openings have reached the stage where extensive repairs are necessary and for this reason the road employs a full-time masonry gang.

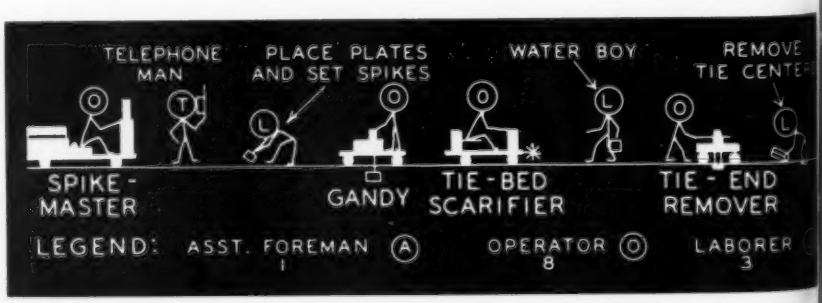
Today, the same trackage is maintained by five section crews on the main track and two crews in Potomac yard. Each section is furnished with a stakebody truck, a wheeled tractor-compressor, tamping guns and the usual hand tools. Section crews can also draw upon other power equipment, such as rail saws, rail drills, bolting machines, spike drivers and tie borers, which is kept at locations within easy reach.

In addition to the section forces, other permanent track forces consist of a tie-renewal-and-ballasting gang, a work-train gang and a ditching gang. In general, the tie-renewal-and-ballasting gang renews ties and surfaces the track, but it also forms a nucleus for the approximately 100-man gang required when relaying rail. The work-train gang, comprised of a foreman, a cook, 1 machine operator and 5 trackmen, unloads and distributes the ballast for the surfacing work, assists the ditching gang and helps the section crews on work too extensive for the latter to carry out alone. The ditching gang is discussed separately in this issue in the article "How the roadway is maintained." Since all track maintenance work is carried out by full-time employees, no extra forces are needed.

The sharpest reduction in the maintenance-of-way forces has been made since January 1955. At that time these forces numbered 529 men, including 14 supervisory officers. Of this number 474 men were engaged in the maintenance of track and 55 men in B&B work. In March 1957, the scheduled M/W force numbered 301 men, including 12 supervisory officers. Of this total 247 men were engaged in track work and 54 in B&B work.

"We are fortunate in having high-grade foremen on this road; good loyal men, many with long seniority," said J. C. DeJarnette, chief engineer. "When we lengthened our sections we kept most of our foremen with us by placing the displaced ones as second foremen and assistant foremen. The second foremen patrol the track on the longer sections and they sometimes take a few men to correct some track irregularities without disturbing the larger gangs appreciably. The assistant foremen carry out work assigned to them by the foremen.

"We have men who are reliable



PRODUCTION tampers do the bulk of the road's tamping. On this job, a Matisa and a McWilliams (background) work together.

SURFACING gang of 29 men is mechanized and averages about 63 miles of track a year.

and "nucleus" gang to which section men are added when laying rail

and will use good judgment in seeing that a job is done right. The new arrangement enables the displaced foremen's families to stay in the same neighborhood. We provide all our section foremen with a home and a small piece of property for which they pay no rent, light or water bills, or taxes. As a result their morale is high."

Mr. DeJarnette explained that this reorganization of track forces could not have been carried out except for several factors. For instance, using trucks the section crews can drive out to their work at any time. Moreover, the construction of access roads now enables 90 per cent of the mileage to be reached by truck. Section forces still have motor cars on hand but they are not used except for stand-by purposes or in yards.

Since the road is now fully dieselized, fewer but longer trains are operated, which allows the men more continuous work periods on the track. The general track condition is now so good that emergency track work is practically eliminated. At one time, the road had two extra gangs at Richmond just rehabilitating tracks; today this work is done by the section forces.

"Another important factor," said Mr. DeJarnette, "is the fine cooperation we get from the operating department. Without that, our plan of reorganization wouldn't work. Whenever we lay rail or ballast the track, trains are detoured around the gangs, and we have two-directional signalling to assist in handling train movements at these points.

"We also have an understanding with the operating department in the event of severe snowstorms. We do not have the force to keep all turnouts open. To make the most effective use of our available force, the operating department has indicated certain interlockings which must be kept open for straight main-line movements; the others are to be opened up after the storm has abated. This eliminates the need for keeping all crossovers cleaned of snow and permits us to use our forces to the best advantage during the emergency.

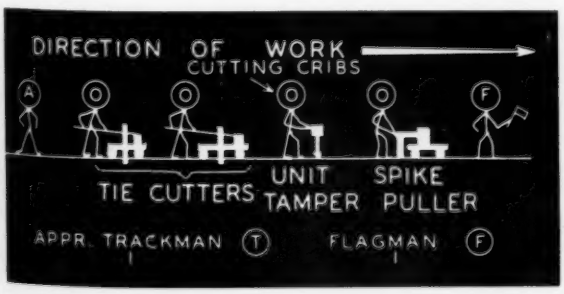
"This spirit of cooperation extends to all departments and it is something of which we are proud," continued Mr. DeJarnette. "For instance, the mechanical department needed a conveyance to speed up the inspection of trains of cars in our Acca yard.

"We turned two motor cars over to them and, by keeping the adjacent track open, they can make car inspections much faster. We also let them borrow one of our Tractairs for keeping the air pumped up on trains before a locomotive can be coupled on to them. This saves time and reduces terminal delays."

History of tie practices

The RF&P started installing creosoted ties in 1936. The road would buy about 70,000 ties annually from farmers along its line and ship them to a creosoting plant for treatment. However, these ties had no S-irons and were of various ages, some being from timber cut six days before treatment and others six years. Species included beech, birch, maple, gum and some pine which did not last long in service. "Some," said Mr. DeJarnette, "should never have been installed in the track, and we had many tie failures."

The road now exercises more care in purchasing ties. For the last several years, it has been installing No. 3, 4 and 5 creosoted mixed oak, obtained from a treating plant located on the road at Fredericksburg. The number of main track ties renewed



CROSSTIES are renewed about one week in advance of the surfacing by a highly mechanized gang. Eight men of the 13-man gang are operators of machines.

ALL NEW RAIL is welded into continuous lengths, except "A," "X" and short rails. First installation (left) was laid and surfaced in 1950 and has not required any surfacing since.

during the last seven years is as follows:

Year	Crossties	Ties Per Mile Main Track
1950	16,206	59
1951	40,650	147
1952	41,876	151
1953	41,927	152
1954	56,876	204
1955	30,193	109
1956	13,301	47

"Of course, where we work the track the number of ties used per mile is higher," said Mr. DeJarnette. "In 1956, this ran about 138 ties per mile of track worked. We are now at the bottom of our tie-renewal curve and there's no place for tie renewals to go but up."

Failed crossties are renewed about one week in advance of a surfacing gang. New ties are installed by a tie gang consisting of an assistant foreman, 8 machine operators, 6 trackmen and I apprentice trackman. The equipment used for this work includes a Fairmont spike puller, a hand cribber, two Woolery tie cutters, a Woolery tie-end remover, a Fairmont tie-bed scarifier, a Nordberg Gandy, and an RMC SpikeMaster.

With this gang consist an average of 175 crossties are renewed in a 6-hr on-track work day where traffic is diverted. When working under traffic, this gang averages about 80 ties per day. To step up production, the road plans to add two more tie cutters to the equipment furnished and expects a production of about 200 ties per day.

Out-of-face surfacing is now done mechanically. The RF&P purchased a Matisa tamper in 1951 and a McWilliams tie tamper in 1955, and these two machines now do the bulk of the tamping. However, about one-third of the track tamped is done by hand-held units powered by rubber-mounted air compressors. No fork tamping has been done since 1953.

For each of the last two years an average of 86 miles of track has been tamped. While this mileage makes it appear that surfacing is on a three-year cycle, Mr. DeJarnette points out that this is not the case because some curves must be worked every two or three years which, though adding to the mileage tamped, does not shorten the time for working the entire main track. Actually, the road is striving to work the track on a four to five-year cycle.

For this work the road has a surfacing gang consisting of a foreman, an assistant foreman, 2 apprentice foremen, 5 machine operators, 1 machine-operator helper, 17 trackmen and 2 apprentice trackmen, a total of 29 men. The equipment used for this purpose includes a Kershaw ballast regulator, a McWilliams tie tamper, a Kershaw track broom and a Railway Track-work hydraulic track liner. To this consist, the road plans to add a Nordberg Trak-Surfacer, which will be placed just ahead of the tamping machine.

The ballast, obtained from an on-line quarry, is unloaded by four men ahead of the surfacing gang, using local freight trains or, when inside yard limits, yard engines. About 450 tons of crushed stone ballast are unloaded for each mile of track tamped. Side-dump hopper cars, of 45 tons capacity, are used for ballast distribution. Two years ago, the road had 115 of these cars assigned to M/W service. However, because the operating department now provides two-day round-trip service, 100 of these cars have now been assigned to revenue service.

All new rail is welded

About 90 per cent of the rail on the RF&P main track is 140-lb RE section, which the road adopted as standard in 1947. The remainder is 131-lb section which the road expects to change out as its rail budget permits. Yard tracks are built mostly with 130-lb rail.

Except for the "A," "X" and short rails, all new rail on the RF&P is welded into continuous lengths. At the present time, the road has 36.5 track-miles of welded rail, and the program for 1957 will add 9 track-miles more.

Standards for RF&P Track

Rail: 140-lb RE section—All, except A's X's and shorts, welded into continuous lengths.
Joint bars: 36-in, 6-hole
Tie plates: 8-in by 14-in by 7/8-in, 8 hole
Ties: No. 3, 4 and 5, 8-ft 6-in, creosoted mixed oak
Ballast: 5/8-in to 1 3/4-in crushed granite
Tie pads: Self-sealing pads under all insulated joints, through highway crossings and 10 ties each side, under some frogs and railroad crossings and under one installation of welded rail.
Tie plate lock spikes: Used as anchor spikes on curves 2-deg and over
Track gage: 4-ft 8 3/8 in on tangents and 4 ft 8 1/2 in on curves
Bridge approaches: Uses 10-ft crossties for 6 ties at each end of open-deck bridges
Turnouts: Mostly No. 10's but No. 15 crossovers. Have two No. 20's at interlockings and will go to No. 20 crossovers with curved points. About one-third of frogs on turnouts to sidetracks are spring-rail.
Switches: Almost all power-operated. Spring switch stands used in Potomac, Acca and Richmond yard where run-through is permissible.
Highway crossings: Black top (cold mix)
Crossbuck roadway signs: Faces reflectorized with Scotchlite.
Track centers: Main tracks on 13-ft centers, except for No. 3 and No. 4 mains where 14-ft centers are used.
Drainage: Six-inch Armco drainage pipe under all highway crossings
Curvature: Except for a 7-deg curve on the "loop" at Richmond, and three curves of 2 deg 30 min, all curves are 2-deg or less.
Curve superelevation: Maximum of 6 in.
Grades: Ruling grade is 0.80 per cent

Because of the relatively small tonnage of new rail laid each year, the RF&P finds that it is not economical to rent a rail-welding plant. Instead, it has worked out an arrangement with the Norfolk & Western for welding its rail at a Linde Products Company pressure-welding plant rented by the N&W at Roanoke, Va. The RF&P rail is shipped directly from the steel mills to Roanoke where it is welded into the desired lengths and loaded onto a train of specially equipped flat cars furnished by the RF&P. The long lengths are loaded 13 on a lower tier, 13 on the next tier, and sometimes 4 on a third tier.

When loaded, the train is hauled to the location where the rail is needed, and is unloaded. For this purpose, the RF&P has equipped a push car with a three-roller "eye." The rail is threaded through the eye of the push car, which is trailed behind the train, and deposited between the running rails of the track. A gang of 8 men is employed for unloading the rail.

For laying this rail, the road assembles men from its sections to form a gang of about 100 men. Power equipment used by the gang includes a Fairmont spike puller for removing spikes from joint ties; 4 Raco power wrenches, of which two are for removing bolts from the old rail joints and two for tightening bolts on the conventional joints connecting the long lengths; 3 Nordberg spike pullers, one of which is a spare unit; a Fairmont crib reducer; 3 Nordberg adzing machines; a Fairmont creosote applicator; a Dun-Rite pregaging template and gaging machine; a Kershaw Mocar crane for turning the on-track machines, carrying supplies and for lifting rails out of highway crossings; a Nordberg tandem tie drill for boring holes for line spikes in peg-anchored plates; and a McWilliams tamper for supplying air to six I-R hand-held spike drivers.

Immediately after being laid, all welds are tested by a Sperry Ultrasonic testing unit. A Matisa tamper follows behind for tamping all swinging ties.

Since the road was dieselized, it has been noticed that the outer rails on curves wear away faster than formerly. To extend their service life, it has been the road's practice to turn the lengths end for end whenever curve wear had widened the track gage from 1/2 to 3/4 in. Being work hardened, the rail did not wear as fast after turning. However, the RF&P plans to reduce the frequency of turning the rails by installing rail lubricators.

Changes in the bridge and building forces have not been as marked as those made in the track forces. Because of the permanency of the culvert and bridge structures, bridge work consists essentially of repairing failing brick or concrete arches, concrete headwalls and wingwalls, and painting steel structures. The latter are now painted with aluminum paint as standard practice. Building work consists primarily of maintaining and painting existing structures. Every railroad-owned building on the RF&P is assigned a number, and a complete description and maintenance record is kept for insurance and other purposes.

All B&B work is carried out by a force of about 50 men, consisting of a masonry gang, a paint crew, a carpenter gang and two small carpenter crews, one working in Potomac yard and the other in Fredericksburg. The masonry gang, paint crew and large carpenter gang are each housed in camp cars and are well equipped with air and electric power tools.

After a long, hard pull, the RF&P is now enjoying the full benefits from the rehabilitation of its fixed properties and the reorganization of its maintenance forces. In recent years its MW&S operating expenses have been going down consistently. In 1954, it reduced its expenses slightly more than $1 million (22 per cent) as compared with 1953. In 1955, expenses were reduced more than $360,000 (10 per cent) as compared with the preceding year. Again, in 1956, expenses were reduced more than $440,000 (14 per cent) compared with the year before.

The result is that for 1956, the road's maintenance - of - way ratio dropped under 10 per cent for the first time. Yet, in spite of the economies effected, the general condition of the road is better than before.

More "Progress" ▶▶▶

Use of company-owned grading, ditching and mowing outfits . . .

EARTHMOVING equipment is employed in widening the deeper cuts, moving side ditches away from the track, and restoring eroded embankments.

DITCHING gang, comprised of a foreman and four men, keeps busy on right-of-way ditching.

Progress on the RF&P . . .

How the roadway is maintained

Effective use made of grouting, grading and weed spraying and mowing equipment

● Roadway care in the past on the RF&P consisted primarily of cleaning out side ditches by hand and with an American ditcher. However, soft spots developed which often made it necessary to pick up the track two or three times a week.

The road then put on two grouting outfits which did a large amount of work and with good results. A small bulldozer and a crawler crane equipped with a clamshell bucket were later acquired for cleaning out and deepening the cut side ditches. By deepening the ballast section as well as the ditches, and because of dieselization, fewer soft spots developed, with the result that there are few places today which can be called soft spots.

The RF&P is not without its troubles with land slides. At its north end the line was built through hills of blue marl, which is an unstable clay when wet and difficult to contain. One method of correction, which the road found successful, is the driving of pieces of old rail to pin the several strata together.

In 1955, the road acquired several earthmoving units with an option to buy. These were employed in widening and benching the deeper cuts, moving the side ditches away from the track and deepening them, improving drainage, and in restoring the embankments of eroded fills. The results have been so beneficial that the road not only exercised its option to buy these units but also purchased additional units.

Its fleet of earthmoving and ditching equipment now includes two Bucyrus-Erie Model 22-B crawler cranes, a Koehring No. 205 crawler crane, 3 Caterpillar DW-15 tractors and No. 15 scrapers, 2 Caterpillar D-8 bulldozers, 2 Caterpillar D-4 tractors and No. 40 scrapers, 1 Caterpillar No. 112 motor grader, 1 GMC 2½-ton dump truck and a 600-gal water trailer. The cranes also have magnets, ¾-yd clamshell and dragline buckets and rail tongs to make them as fully versatile as is possible.

One of the crawler cranes is employed with a ditching gang consisting of a foreman and four men, housed in camp cars. This gang is engaged not only in right-of-way ditching but also in constructing French drains. Another crane is employed for various work in Potomac yard.

After benching a deep cut, the road plants grass seed as standard practice to reduce erosion. This seed is a mixture of various grasses as formulated by the state highway department and local seed suppliers for obtaining the best results for immediate as well as lasting growth.

Before broadcasting the seed, the road uses a machine called a Klodbuster for harrowing the benches. Because of the difficulty in seeding slopes the road first uses a long chain to which spikes are attached, for forming lodging places for the seed. The upper end of this chain is attached to a Fordson wheeled tractor and

. . . promotes drainage and gives right of way well-kept look

DURING the weed season, two Fordson tractors, one with a sickle bar and the other with a rotary mower, mow the R/W.

STANDARD practice calls for seeding new slopes of cuts and fills. Grass seed is a mixture formulated for locality.

the lower end to a roller. Also, the road is planning on obtaining a mulching machine for providing a cover for the seed until it has germinated.

How weeds are controlled

For controlling weeds on its track section, the RF&P employs The R. H. Bogle Company under contract for its weed-spraying service. This is done for three consecutive years, after which spot spraying usually is sufficient for the next year to control the vegetation, followed by one year of no spraying. For weed control on its right of way, the road has two Fordson tractors, one of which has a sickle-bar attachment and the other a trailer rotary mower.

Fire laws in the State of Virginia require railroads to clear their rights of way of all combustible material and to take measures for preventing the spread of fire from the rights of way to adjoining fields. To comply with this, the RF&P attaches a double plow to the rear of its right-of-way mowers and, at the beginning of the weed season, plows a two-furrow fire lane along the edge of the right of way. Later, when the vegetation on the right of way is burned, it is an easy matter to prevent fires from spreading off the property.

Other facets of performance

Any description of the RF&P's program of modernization and reorganization would not be complete without reference to these additional ways in which it has sought to improve the performance of its M/W forces . . .

. . . Welding work reorganized

Before the rail had been brought to its present excellent condition, the RF&P employed a system gas-welding gang for building up rail ends and rail-end hardening. This gang consisted of a foreman, 6 welders and 6 welder helpers. In addition, an outside welding service was contracted to rehabilitate crossings, frogs and switch points.

In 1956, however, the system welding gang was replaced with one welder and a helper on each of its three districts, working under the supervision of a system foreman. This force is sufficient to do all of the gas-welding work required.

The road also recently purchased a P&H 60 to 325-amp electric-arc welder, which is mounted on a stake-body truck, and a portable 3-kw electric grinder. One of the welders and his helper are now in training for handling the repair and maintenance of manganese-steel trackwork. As soon as they are qualified, these men will handle all such work for the system.

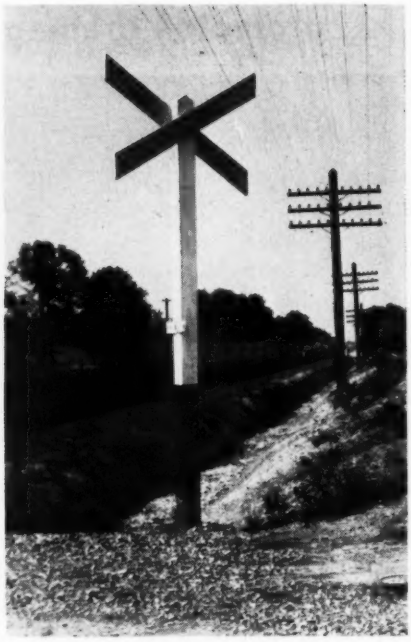
. . . Crossbucks reflectorized

To provide a vivid warning to all motorists approaching the railroad, either during the night or day, the road has applied Scotchlite reflectorized sheeting to all of its crossbuck signs. This sheeting was applied on both sides for visibility in both directions.

. . . Brine corrosion arrested

A large amount of the traffic handled by the RF&P consists of perishables carried in refrigerator cars. Dripping

M/W SHOP is equipped to make repairs to all trucks and track machines owned by the railroad. Complete records are maintained.



REFLECTORIZED sheeting has been applied to both sides of all crossbucks to reduce crossing accidents.

M/W efficiency *plus* safety

brine from these cars causes severe corrosion of the spikes, plates and the areas behind the joint bars. Starting in 1952, the road made it a practice to coat the rail and fastenings with a rust inhibitor, applying it with a joint sprayer car and homemade attachments. However, the labor cost for this method of application proved to be more than having the work done by contract and, beginning in 1956, the National Aluminate Corporation took over this work, coating the rail and fastenings with Texaco 45.

. . . To eliminate oil lamps

At the present time the road is considering ways of eliminating oil lamps at switches. Scotchlite reflectorized facings are being tested on switches where yards are well lighted and electric switch lamps are planned for switches where power is available. At outlying hand-throw switches, battery-powered lamps will probably be used.

. . . Has work-equipment shop

The road's M/W equipment is maintained by a force consisting of a foreman, two mechanics and two helpers, who work in and from a repair shop at Fredericksburg, Va., which is a central location. The mechanics are furnished trucks fully equipped with tools for handling normal field repairs. A 200-amp d-c electric-arc welder, mounted on a two-wheel trailer, is available to either mechanic for repair work out on the line.

The shop is equipped for overhauling and making light repairs to all track machines and trucks owned by the railroad, and a description of each machine and a record of the work done on it are maintained there. It has two monorails, several hoists, a 40-ton press, both gas and electric welding equipment, a small lathe, a brake reliner, a grinder, a parts cleaner, a high-pressure steam generator, an air compressor with air tools, a grease rack, work benches, and complete sets of machine tools. A large stock of parts, batteries and tires is stored at this shop.

All trucks are brought into the shop twice a year for inspection, testing and adjustment to comply with state regulations. Worn tires are replaced and the old ones are sent out for recapping.

. . . Wins Harriman Award

The safety program of the RF&P is headed up by a supervisor of safety who prescribes safe practices and who follows up and reports on all accidents. Once a month the supervisor travels over the railroad in a bus and gives lectures and shows films on safe practices to all employees. The road also has inaugurated certain features in its safety program to stimulate a competitive spirit on the departmental level, and W. T. Rice, president of the RF&P, presents a presidential plaque each year to the department having the best safety record.

In the MW&S department, the chief engineer holds a safety meeting every two months where the supervisory force, from the general foreman up, discusses safety and measures which can be adopted for the prevention of accidents. The competitive spirit also is imbued within the department, and any supervisor who goes through an entire year with 72 hr or less time out because of accidents is awarded a certificate of safety. When rail is being laid, a safety foreman is present for detecting and correcting unsafe practices and for preventing the men from using unsafe tools.

During the last 10 years, the road has had only 5 fatal accidents and reportable injuries have been reduced from 196 to 26 per year. Its casualty rate per million man-hours was 5.63 for 1955 and 5.05 for 1956. The road's outstanding safety performance was sufficient to earn it the E. H. Harriman Memorial Certificate for the year 1955 in its particular classification.

How the Rock Island

Renews bridge floors in panels

Looking for a short-cut for renewing bridge ties on steel spans? The Rock Island has developed a scheme for doing this work, which, according to officers of this road, not only saves time but also produces better workmanship at less cost than conventional methods, as well as being a lot safer. It is simply a matter of prefabricating the floors in panels and installing them as complete units.

●To most bridgemen on the Rock Island, the installation of bridge decks in panels is not new. It was first used in 1950, when J. E. Freeman, then foreman of a system steel-bridge gang, had a short girder span to install which was light enough to be set in place intact. He applied the bridge ties and guard timbers to the span while it was still on the ground, then installed the span complete with its floor. This procedure pointed up the advantages of assembling the floor with the men working on the ground and germinated the idea of installing bridge ties in panels even when the spans themselves are not replaced.

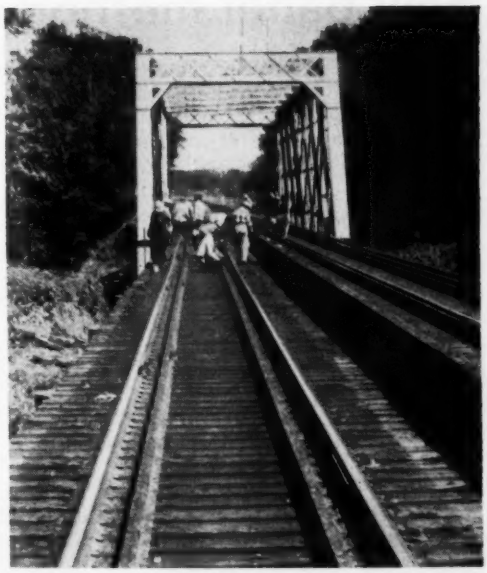
How method was perfected

In considering this idea, Mr. Freeman conceived a plan of assembling the ties in 14-ft panels, which is the standard length of guard-rail timbers used on the Rock Island, and setting them in place with a crane. However, standard floor plans call for using guard-rail bolts and hook bolts on the first tie at the end of a span and every third intermediate tie. This left two ties out of every three unattached to the guard timbers except by Teco tie spacers. Since the treated bridge ties weigh from 250 to 380 lb each, they are too heavy to be lifted by the Teco spacers only.

To prevent these ties from becoming detached while the panel was being lifted, Mr. Freeman placed an untreated 4-in by 4-in by 14-ft timber on each side beneath the tie ends and held them firmly in place by three steel bands strapped over the guard timbers. This allowed the panel to be lifted as a unit. He has now used this plan many times with satisfactory results. And, since being promoted to master carpenter at Rock Island, Ill., he has been training his foremen to use this method. Several other master carpenters on this road have also adopted the procedure.

A recent project involving a Rock Island bridge affords an example of how the scheme works. This job is described on the following pages.

Method of renewing the deck on this bridge . . .



. . . is shown by this and following views.

FLOOR PANELS were prefabricated in Silvis yard, taken to the bridge on a flat car and distributed on the ground alongside the bridge with a crane.

First they finished the job of removing the rails and old ties . . .

INNER GUARD RAILS are moved back out of the way. Spikes are then pulled on the running rails, which are also moved back and tie plates removed.

BRIDGE TIES are removed 12 or 13 at a time and loaded into gondola cars.

How panel method works

Bridge No. 1693 spanning the Green river near Rock Island, Ill., affords an example of how the panel method works. This structure consists of a 153-ft double-track through-truss span flanked on its west end by five 38-ft deck-plate girder spans under each track. The ties on this structure were placed in 1930, and those on the westbound track were scheduled for renewal this year. Also on the work sheet was the renewal of the top angles of the floor-beams of the truss span under the westbound track.

The angle-renewal work on the truss span required the routing of traffic on the opposite main for certain hours of the day and Mr. Freeman planned the floor-renewal work to be done at the same time that the steel-bridge crew was renewing the top angles. "This way," said Mr. Freeman, "I can use the crane that accompanies the steel-bridge crew and we won't have any more slow orders on the track than we have to."

All ties in the westbound track were renewed this year by the panel method. This work on the main span had been completed prior to the time an *RT&S* reporter visited the job and observed the installation of the panels on the five westbound approach spans.

The panels were prefabricated in Silvis yard, which is about 2½ miles from Green River bridge. Two panels 12 ft long and one 13 ft long were fabricated for each 38-ft span, using 8-in by 8-in by 11-ft bridge ties, prebored before treatment, and 4-in by 8-in by 14-in treated guard timbers cut to the desired panel lengths. The ties were spaced on 1-ft centers. The 15 panels were loaded by a crane onto a flat car. This prefabricating work required the services of four bridgemen and about 25 per cent of the foreman's time.

Preliminary work at the bridge included the removal of all timber guard-rail bolts; the removal of all hook bolts and the substitution of drop bolts; and the pulling of all spikes on the inner T-rail guard rails and on the inside of the running rails except from those ties having the drop bolts.

A work train was used to haul the panels and supplies from the yard to the bridge. This consisted of a flat car holding the 15 floor panels; an American 40-ton locomotive crane; a flat car holding new tie plates, tie pads, track spikes, hook bolts, nuts and washers and wood blocking; and a caboose. It was manned by the crane operator, and a train crew consisting of an engineer-pilot, a conductor and two brakemen, one of whom was also employed as a flagman. The B&B crew consisted of a foreman and 10 men.

Panels unloaded on ground

The crane, using a four-leg sling, lifted the panels from the car one by one and distributed them on the ground alongside the bridge. The supplies were unloaded at the west end of the bridge. The work train then ran to a nearby siding where the flat cars were set out and a gondola car was picked up and placed in the train between the crane and the caboose.

While the work train was doing this switching, the bridgemen pulled the remaining track spikes over the easterly approach span and removed the bolts and joint bars from the inner guard rails and running rails on this span.

By 10:10 am the work train was back on the bridge. The crane first lifted out the rails and dragged them back to the adjacent approach span. The old tie plates were cast upon the deck of the eastbound track.

The end of the hoist cable was then passed through the floor and a bridgeman threaded it between 12 of the old ties and the top lateral bracing of the steel span. The end was then passed up through the floor and hooked to the cable, after which the crane lifted the ties from their beds and loaded them into the gondola. Two men then swept the tops of the girders clean of rust and dirt.

How they were installed

Next the four-leg sling was attached to the hoist cable and lowered to two men on the ground who attached a leg to each corner of a new floor panel. This was raised, carefully alined, and set in place. Drop bolts were driven for temporary positioning. New tie pads and tie plates were applied, and a second panel was similarly placed. The removed rails were then moved forward as re-

. . . and then applied the new panels

FLOOR PANELS, previously distributed alongside the bridge, are lifted intact by the crane. They are held in panels by steel straps.

PANELS were carefully alined, then held in position on the girders with drop bolts.

quired and blocked up when necessary, after which the work of removing the old ties and installing the floor panels was resumed.

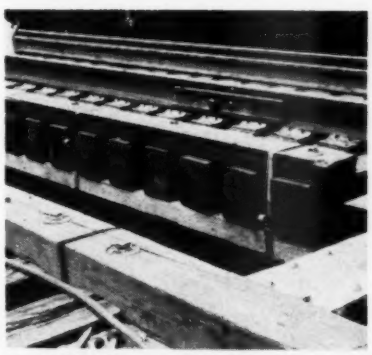
This procedure was continued until six panels had been placed and the rails restored. Because of the need for closing up the track for the Golden State Limited and the Rocky Mountain Rocket, the work train left at 2:30 pm and the work of spiking the rails and applying the hook bolts was begun. By 3:30 pm the track had been restored to service. The nine other floor panels were installed on the following day. The 4-in by 4-in timbers used on the undersides of the panels to stiffen them were recovered after snapping the steel straps with a dull ax.

Faster and cheaper

"We could have installed all 15 panels in one day if it hadn't been for the time required to unload the material and switch the work train," said Mr. Freeman. "Also, it takes time to open and close the track, but you can see how fast the panels go in. Since it takes about two hours to remove and replace the rails, we need about four hours of on-track time to make this plan worth while. Today, we placed six panels in an hour and a half, covering two steel spans.

"For every dollar it costs to install bridge ties in the conventional way by hand, we do it this way for 40 cents. Also, I get better workmanship, the men produce more and are more secure when working on the ground, and there is less chance of an accident."

AS SOON as a floor panel was in place, tie pads and tie plates were applied and rails were restored. Meanwhile, the next panel was being renewed.



CLOSE-UP of a panel showing steel straps and temporary underfloor timber.

RAILS were replaced progressively to keep up with the panel renewals.

Fast track laying in tunnel . . .

Convinced that the conventional way of laying new track through a tunnel recently bored through the Rimutaka Mountain range would be too slow and would delay placing a line change in operation, the New Zealand Railways developed a plan to expedite this work.

While concreting the floor of the new tunnel, the road welded the rails in nine 39-ft lengths, added the ties and fastenings to form track panels 351 ft long, and laid them intact with traveling hoists.

This was the situation

● Anxious to get its new line-change between Wellington and Wairapapa into operation after the construction of a new tunnel had been completed, the New Zealand Railways devised a plan to speed up the laying of the track through the tunnel. It was done by prefabricating the new track near the portals with welded rail up to 351 ft in length and laying it in panels. This plan proved so successful that the road adopted it as standard practice for laying track in tunnels, and expects to use it in several situations where tunnel floors are lowered.

The line-change is northeast of Wellington and involves the construction of a tunnel 5.46 miles long through the Rimutaka Mountain range. The new line not only reduces the mileage by 9 miles but it also reduces mountain grades, ranging from 6.25 to 7.7 per cent, to a maximum grade of 1.43 per cent. Since the new line had been under construction for several years, the road was anxious to get it com-

Here's how the track was laid

RIMUTAKA TUNNEL, more than 5 miles long, has been lined and floored with concrete. Track shown is not the completed track but is a construction track, having a 3-ft gage, left by the concreting contractors.

● While the floor of the tunnel was being concreted, 90-lb T-rails were being welded into 351-ft strings of nine 39-ft rails each at the road's flash butt-welding depot at Woburn. The long lengths were then carried by a special train to a depot set up at Mangaroa on the Wellington end of the tunnel, satisfactorily negotiating reverse curves of 17 deg 30 min on the journey. The rails were unloaded at Mangaroa and stored on skids.

The ties and fastenings also were unloaded at Mangaroa and stored adjacent to the prefabrication area. The ties had been adzed prior to shipping and were prebored on arrival at Mangaroa with the use of a special template. One panel of track, 351 ft long, was assembled carefully and this first one served as a model for the fabrication of other panels. The crossties were placed on the ground and carefully spaced, after which two long rails were skidded over from the stack and spiked at standard gage. Screw spikes were used and these were driven by impact wrenches powered by a 210-cfm air compressor.

As each panel was completed, it was skidded over to a temporary storage bank by means of three air-operated winches. Then, when ready to be taken into the tunnel, it was further

AFTER welding the rail into 351-ft lengths, the ties, plates and screw spikes were added to form track panels. The panels were then pulled into a position over the main track and were raised by hoists so that a train of flat cars could be moved beneath them for hauling into the tunnel.

. . . using pre-assembled panels

pleted so as to enjoy its operating advantages. The concreting of the tunnel floor and the building of a track through the tunnel by conventional methods presaged a further delay in getting the new line into operation, so the road worked out a plan for expediting this work.

Levels floor of tunnel

The first step was to excavate and smooth the tunnel floor to final grade. This was effected by TD-6 bulldozers, fitted with exhaust scrubbers, which pushed the spoil to the portals where Conway No. 75 muckers loaded the material into side-tipping muck cars. Spare muck loaders were kept available in the event of a breakdown. The muck cars had a capacity of 5 cu yd each and ran on a specially laid 3-ft gage construction track. The cars were hauled by an electric locomotive to the disposal site.

The next step was the construction of side drains by building concrete wall footings and curbs. Steel forms were used for this purpose and the concrete was brought in by a specially built transporter having two sliding gates, one on each side, from which concrete was discharged by gravity. Drainage slots were built through the curbs to permit ground water to reach the drains.

When this concrete had hardened sufficiently, temporary rails were laid on the curbs and were used in connection with laying the floor slab. Concrete was brought into the tunnel in three 1½ cu yd compartment, bottom-dump cars pushed by an electric locomotive. These cars were pushed up a ramp onto a flat-bottomed transporter which distributed the concrete. The transporter was powered by a 5-hp engine, equipped with an exhaust scrubber, and was propelled through a chain drive.

The concrete was laid on the floor of the tunnel between the curbs and was leveled off by a screed. The latter, also running on the temporary curb rails, was equipped with a winch, anchored at the drain slots in the curbs, for pulling itself along.

skidded onto the main track where nine fixed gantry cranes, each capable of lifting 3 tons, raised the panel 6 ft above the running rails. A train of nine flat cars, each containing a special bolster, was moved beneath it and the panel was then lowered.

Each bolster was telescopic in design and could move laterally from 3 to 4 ft. These were necessary for supporting the panel while the train passed over a 2-deg 54-min curve located between the fabricating area and the tunnel. Upon arrival at the tunnel portal, the track panel was relined straight on the flat cars.

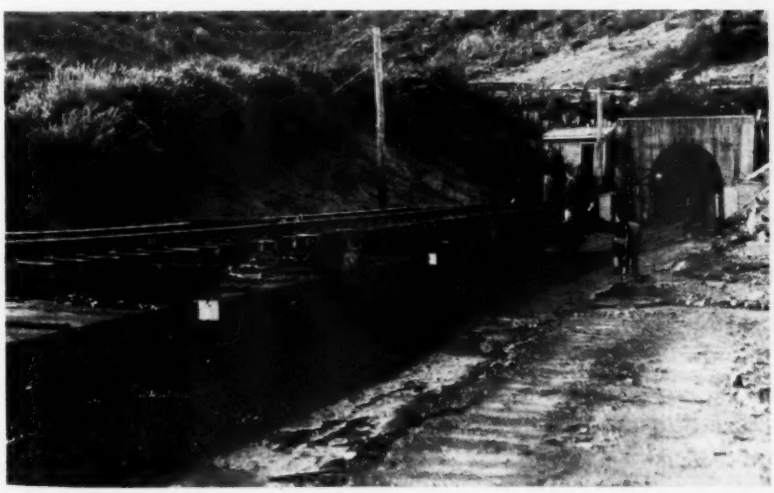
The road designed nine inverted U-shaped traveling gantry cranes for hauling and placing the track panels within the tunnel. These cranes ran along the temporary rails left on the curbs by the force concreting the tunnel floor.

The train of flat cars was moved as far as the main track had been extended where the traveling cranes lifted and held the new track panel while the flat cars were withdrawn and returned to the fabrication site for another load. The removable cross bracing on the lower part of each gantry was restored and the cranes, complete with the new track panel, were towed ahead 350 ft at walking pace by means of a winch on a TD6 tractor. The lower cross bracing on the cranes was then removed. When in position, the track panel was lowered onto the concrete floor and connected to the last-laid panel by joint bars and bolts.

Faster than relaying rail

This process was repeated until all track had been laid through Rimutaka tunnel. Work progressed at an average rate of 3,168 track-feet a week. This rate is reported to be twice as fast as the progress obtained during main-track relaying operations.

The road intends to use this method of track laying on several other tunnels located on the North Island trunk line. These tunnels have restrictive overhead clearances for a new type of motive power proposed for this line. The additional height will be effected by removing the existing track, lowering and levelling the tunnel beds, concreting the tunnel floors and laying the new track in panels. It is anticipated that this work will also improve the drainage and make it easier to keep these tunnels clean.



EACH flat car of the hauling train was equipped with a special bolster on which the track panels rested. The bolsters were telescopic in design to permit the panel to be moved around a 2-deg 54-min curve on its way to the tunnel. Note the special hoist and traveling frame at the mouth of the tunnel for setting the panels in position within the bore.

UP FROM THE DEEP rises the fill being dumped into Utah's Great Salt Lake by the Morrison-Knudsen Co. in constructing the solid embankment replacement for the Southern Pacific's treatle across the lake (see *RT&S*, Sept., 1956, p. 71).

"ROBOT" TOURNADOZER is being tested by the U. S. Army for use in radioactive or combat zones. Radio control is possible for distances up to 15 miles.

PATRONS PICKED THE COLORS for stations on the Long Island. To get the program off to a good start, LI President T. M. Goodfellow (left) and Mayor W. O. Guide of Hempstead, L. I., take brush in hand while W. C. Rege, chamber of commerce president, stirs paint.

News briefs in pictures . . .

SEEN on Wabash during inspection by AREA Committee 22, Economies of Railway Labor (l to r): Wm. J. Hedley, ch. engr., Wab.; H. J. Weccheider, engineer M/W, Erie; L. A. Loggins, ch. engr., SP Lines in Tex. & La.; J. P. Morrissey, div. engr., Erie; and F. R. Micheal, engr. trk., Wab.

WORLD'S SAFEST POWER SAW

NO WHIPPIN', KICKIN' CHAIN

...just guide it and relax!

•hand saw safety
•power saw speed

Photo Courtesy of C. B. & Q. Railroad

GAS all-new

WRIGHT® REBEL

20" RECIPROCATING BLADE

Saves time, money on 1001 jobs: Cuts sheathing, piling, concrete forms, ties; does *precision* mill-edge cutting; clears land; ideal for bridge-work and wrecking.

- Cuts in all positions.
- Sharpens blades in 5 min.—right on the job!
- Minimum service—fewer moving parts—no chain
- Operator needs no special training.
- Less than 25 lgs. complete.

ONLY **$189.50***

pneumatic AIR

WRIGHT® CYCLONE

21" RECIPROCATING DOUBLE BLADE

Exceptionally lightweight—big capacity. No fumes... no spark hazard. Actually cuts under water! Connect to any 60 cu. ft. compressed air supply...does everything the *Rebel* does!

- Slices 12 x 12's in less than a minute.
- Unbreakable blades.
- Only 14½ lbs. total!
- Precision cuts—even in 12" radius!

ONLY **$295.00***

*Price includes 20" blade. F.O.B. Sheboygan, Wis. Price applies in U.S. only.

WRIGHT AIR LINE OILER

Gives trouble-free lubrication to Wright Air Saw or other pneumatic tools. Meters oil into air supply. Light weight 1¾ lbs. ½ pint capacity. Non-clogging, works in any position. ONLY **$19.95**

DEALERSHIPS AVAILABLE

FREE FOLDERS TELL HOW TO STREAMLINE YOUR CUTTING JOBS!

WRIGHT POWER SAW AND TOOL CORP.

Subsidiary of THOMAS INDUSTRIES INC.

Executive Offices: 410 S. Third Street, Louisville 2, Ky., Dept. 45-H

Factories at Sheboygan and Ft. Atkinson, Wis.; Hopkinsville and Princeton, Ky.; Los Angeles 22, Cal.; Ft. Smith, Ark.

☐ Send me the facts on the new Wright Rebel (gasoline)
☐ Send me your folders on the Wright Cyclone (pneumatic) and oiler
☐ I am interested in becoming a dealer.

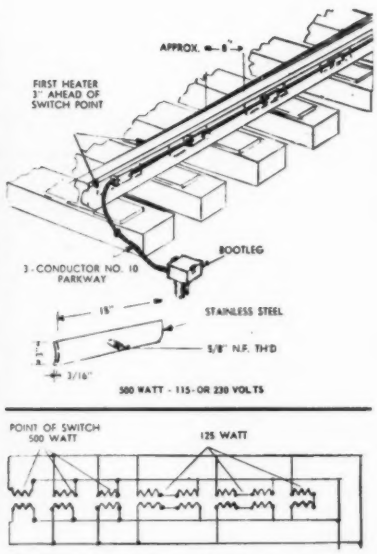
NAME_____

COMPANY (if any)_____

ADDRESS_____

CITY_____ ZONE____ STATE_____

Products



ELEC-TIME switch heater. The circuit shown at the right is optional. The wire size is estimated for this circuit only and the "bootleg" can be placed at the center of the point.

Advantages claimed for . . .

Electric switch heater

AFTER SEVERAL years of actual in-use operation under severe weather conditions, the "Elec-Time" switch heater has now been made available. The manufacturer claims that the three major operational advantages of the new heater are: Maximum radiating surface to rails; uniform heat distribution to ends of switch; and, low power operation. The Elec-Time switch heater comprises a series of heater plates, 15 in long and 3 in wide of stainless steel construction, adaptable to all size switches and derails. A 16½-ft switch, for example, requires 16 heater plates, six of which can operate at 500 watts and ten at 125 watts, wired in series, with a low total demand of 4.25 kwh. Power is continually variable from full power to 25 per cent of full power under all operating conditions. The switch-heater assemblies can be applied to any size switch and the plates are individually replaceable. Installation does not require any grinding of the switch point. *The Rails Company, Dept. RTS, 187 Maplewood Avenue, Maplewood, N. J.*

Twelve-ton payload for . . .

New motor scraper

A NEW HYDRAULIC 7-cu yd struck, 9½-cu yd heaped, 12-ton payload scraper is now being added to the manufacturer's line of scrapers. The Model TS-160 is rated at 155 hp and is said to feature easy maneuverability, visibility, speed and economy for a wide range of construction and maintenance jobs. The TS-160 has a 6-cylinder, 516-cu in displacement supercharged diesel engine rated at 155 hp at 2200 rpm.

Forward speeds range from 3.1 to 25.4 mph, and reverse at 3.1 mph through a five-speed constant mesh transmission. The TS-160 carries 66 per cent of its weight on the drive wheels when empty with equal weight distribution on all four wheels when loaded. With two-speed hydraulic steering, and 90-deg steer each way, the tractor can swing into a 90-deg turn with a 1/6 turn of the steering wheel. A complete turn can be made non-stop in 24 ft 8½ in.

Apron opening of the bowl is 85½ in and width of cut is 97½ in. Depth of cut ranges from 0 to 24¾ in, and depth of spread is 0 to 16⅝ in. Height of bowl sides is 44 in.

All controls are within easy reach of the operator. An adjustable bucket-type foam rubber seat has three heights and several position adjustments for maximum comfort and visibility. A heavy-duty, all-steel cab is offered as optional equipment along with a disc-type, 16-in hand brake for parking. *Tractor Group, Allis-Chalmers Manufacturing Company, Dept. RT&S, Milwaukee, Wis.*

For hard-to-kill grasses . . .

A "one-shot" weed killer

A NEW weed killer, said to eradicate hard-to-kill Johnson, Bermuda and other weed grasses with a single application, has been announced. The product is known as Hexachloracetone and is being marketed in a number of formulations under the trade name HCA Weed Killers for use in non-crop areas. HCA is designed for use with ordinary weed oils and is said to prevent resprouting of noxious grasses by killing the roots.

Full-season control is generally obtained, it is claimed, from a single application and there are many instances where one spray of HCA Weed Killer is reported to have eradicated Johnson grass for a full year after treatment. Since foliage turns brown shortly after spraying, maintenance crews can quickly see the spots they have missed and attend to them while still in the area.

The new herbicide is now available in two forms: HCA Weed Killer Concentrate for dilution in oil; and as a finished spray product called HCA Weed Killer which contains 2 per cent HCA in an aromatic weed oil. The manufacturer points out that, while best results are obtained from HCA-aromatic oil mixtures, good control is also given when kerosene or diesel oil is used as a carrier. *General Chemical Division, Allied Chemical & Dye Corp., Dept. RTS, 40 Rector St., New York 6.*

JUDGE IT by the company it keeps

HVILLE, CHATTANOOGA & ST. LOUIS • ILLINOIS CENTRAL • CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC • ELGIN,
ET & EASTERN • ATCHISON TOPEKA & SANTA FE • BALTIMORE & OHIO • BALTIMORE & OHIO CHICAGO TERMINAL
ORTHERN PACIFIC • TEXAS & PACIFIC •
CAGO & NORTHWESTERN • ALASKA R. R.
S. STEEL CORP. • GREAT NORTHERN •
WORTH & DENVER • CHICAGO, BURLINGTON
UINCY • DELAWARE & HUDSON • CENTRAL
GEORGIA • PENNSYLVANIA R. R. • CHICAGO
STERN ILLINOIS • MINNEAPOLIS & ST. LOUIS •
ERN MARYLAND • MISSOURI-KANSAS-TEXAS
SSOURI PACIFIC • CHICAGO, ROCK ISLAND
CIFIC • ST. LOUIS - SAN FRANCISCO • LEHIGH
EY • BUTTE, ANACONDA & PACIFIC • FLORIDA
COAST • ORINOCO MINING CO. • DELAWARE,
AWANNA & WESTERN • DAVENPORT,
K ISLAND & NORTHWESTERN • NEW YORK
RAL • BOSTON & MAINE • CHESAPEAKE &
O • DULUTH, MISSABE & IRON RANGE •
PS DODGE CORP. • LOUISVILLE & NASHVILLE • UNION PACIFIC • PITTSBURGH & LAKE ERIE • MINNEAPOLIS & ST. LOUIS
ASKA R. R.

THE JACKSON TRACK MAINTAINER

The list of JACKSON TRACK MAINTAINER users reads like a large portion of "Who's Who in Railroads". And the reason for it is this: *WHENEVER EXPERIENCED TRACK MEN INVESTIGATE, THEY FIND CONCLUSIVE EVIDENCE THAT THE JACKSON TRACK MAINTAINER PUTS UP PERFECT TRACK IN A WIDER RANGE OF BALLAST AND CONDITIONS THAN ANY OTHER TAMPING EQUIPMENT.* Let us furnish you with the complete facts or tell you where you can see these machines in action. How about picking up that phone, right now?

CKSON VIBRATORS, INC. LUDINGTON, MICHIGAN

RAILWAY TRACK and STRUCTURES

What's the answer?

To be answered in November . . .

Do you have an answer to any of the questions listed below? If so, send it in. Payment—based upon substance and length—will be made for each published answer. If you'd prefer that your name be withheld, we'll gladly comply.

DEADLINE: September 30

1. To what extent is it practicable to lay rail at night when temperatures are relatively lower and traffic is lighter? What are the more serious objections to this practice? Explain.

2. What, if any, are the objections to using high-strength bolts on railway structures in cold climates? Under what temperature conditions may they be safely used?

3. When raising track to a spotboard and with jacks set at the joints and centers, some foremen sight backward for pulling jacks set at the quarters? Are there advantages in this practice? Disadvantages? Explain.

4. What type of lighting is most efficient to operate and maintain for station platforms—incandescent, fluorescent, mercury vapor, etc.? Explain.

5. To what extent is it possible for railroads to utilize existing, but now little-used, water supply facilities in furnishing water to municipalities? What factors must be taken into consideration? Explain.

Send answers to:

What's the Answer Editor
Railway Track & Structures
79 West Monroe Street
Chicago 3, Illinois

Do you have a question you'd like to have answered in these columns? If so, please send it in.

Spray or brush steel structures?

What are the relative advantages and disadvantages of applying paint and other coatings to steel structures by spraying? By brush? Explain.

Use a combination

By D. H. FISHER
Supervisor Bridge Maintenance
Milwaukee Road
Chicago

Advantages of spray painting steel structures are: 50 per cent to 100 per cent more economical application; spray will get into tight places which are inaccessible when brushing, especially on truss spans; and, on good flat surfaces a more uniform coat is obtained if spray is properly applied.

It must be remembered that skilled spray operators are very essential for the best results.

Disadvantages of spray painting are: There is a tendency for some foremen to thin the paint to the extent that it runs and a proper film is not obtained. Also, if paint is sprayed when wind conditions are unfavorable, the wind will cause paint to drift and claims for damaging private property often result.

Advantages of brush painting are: More effective wetting of surface, resulting in a good bond on rusty or rough steel; and getting into corners and structural joints. On any structure to get best results in painting it takes a combination of both brush and spray painting. The major disadvantage of brush painting is its greater cost.

Brushing slower, but better

By H. S. TALMAN
General Supervisor Bridges & Buildings
Chesapeake & Ohio
Richmond, Va.

The chief advantages of spraying steel structures are that it is somewhat faster than brushing and that spraying can be done in some very few places, such as between I-beams that are close together, where brushing cannot be done too well. However, in such locations, satisfactory surface preparation and cleaning cannot be done either, so it is questionable as to the protection provided in such places in any case. Therefore, about the only real advantage to be derived from spraying is to speed up the job to a degree.

There are several disadvantages to spraying. It is easy to spray too much or too little paint with a resultant lack of uniformity in film thickness. It is easy to skip over spots in corners where visibility is poor. If the wind is right (or wrong), the spray mist will blow on automobiles, houses, etc., if the structure is near roads or houses, with resultant damage claims. The spray mist will sometimes fog over goggles or get into the spray operator's or other workmen's eyes, causing an unsafe condition when working on scaffolds or high places on the structure.

There is a very great tendency to "cut" the paint too much by adding excessive amounts of thinner when the paint is too viscous to spray properly. This results in upsetting the pigment-vehicle ratio, which was determined in the original paint by careful research and study. When this is done the manufacturer of the paint cannot be held responsible for its performance in service.

The advantages of brushing paint, of course, are the opposites of the spray disadvantages. A more uniform film thickness is obtained, close places, corners, rivet heads, etc., can be painted more satisfactorily, no spray mist exists to damage property or create a safety hazard and the paint as it is shipped in the container requires less "doctoring" to make it applicable. There is considerably less tendency for the painter to apply the primer over improperly cleaned surfaces when he is using a brush in-

Early in 1955 the main line of the Southern Pacific in the Sacramento area was treated with 1.2 lbs. of Du Pont "Telvar" W per foot-mile. A year later a similar low dosage rate was applied. Note the excellent results shown above.

For low-cost, long-term weed control use Du Pont **TELVAR**® weed killers

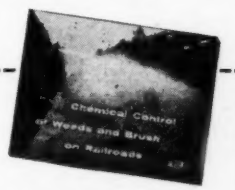
monuron and diuron

For weeds and grasses...Du Pont "Telvar" Weed Killers, used separately or in combination with other herbicides, provide long-term control that cuts yearly maintenance costs. Few chemical herbicides, if any, have excelled "Telvar" in holding weed control on a maintenance basis. In some areas, rates as low as ten pounds per acre applied just once a year have done the job. Where weeds are annuals, a single, low-dosage application often suffices for initial weed problems, too. Available in two formulations: "Telvar" W and "Telvar" DW.

On all chemicals, follow label instructions and warnings carefully.

DU PONT
REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY



For copy of the new 24-page free color brochure, "Chemical Control of Weeds and Brush," use coupon at right.

E. I. du Pont de Nemours & Co. (Inc.),
Grasselli Chemicals D-4032, Wilmington, Delaware.

Please send me your brochure A-2678, "Chemical Control of Weeds and Brush."

Name_____

Firm_____

Address_____

City_____ State_____

stead of a spray. When priming, the painter can work with the cleaning tools and brush paint as well, whereas if spraying paint, the painter must work somewhat behind the cleaning operation and carries no cleaning tools with him. He works farther from the surface being painted and just can't see all the bad spots.

The disadvantage of brush application is that it is slower than spraying. However, the following cycle of painting will probably entail higher surface preparation costs if spraying is done, due to the disadvantages listed for spraying.

It all depends

By L. P. Drew
Assistant Chief Engineer
Union Pacific
Omaha, Neb.

The relative advantages and disadvantages of applying paint and other coatings to steel structures by the use of spraying vs. hand brushing are dependent on a number of factors.

On large steel structures such as truss bridges, viaducts, etc., where many of the members are difficult to paint by the brush method, the spray method has a decided advantage both in cost of labor and in cost of scaffolding. These savings are partially offset by an increased cost in the amount of materials used as there is considerable waste in spray methods unless the operator is very careful and experienced.

On flat work such as plate girders and on small structures that are easily accessible the saving in materials will usually equal the additional cost of labor of applying by the brush method. Additionally, on flat work a more uniform thickness of film is obtained by brushing, whereas with the spray method there will be thick and thin spots which may result in rust showing through unless the operator is very experienced and unusually careful.

In the application of coatings other than paints, such as rust inhibitors and waterproofing solutions, where appearance is of secondary importance, the application by spray method has many advantages both in labor costs and time. With these solutions excessive amounts are usually an advantage; therefore, there is no point in saving materials by spreading the coatings thin as one would in hand brushing.

Must weigh several factors

By J. A. Jorlett
Engineer Structures
Pennsylvania
Baltimore, Md.

The relative advantages of applying paint and other coatings to steel structures by spraying and by brush are not far apart—except for the rapidity by which large flat areas can be covered by spray gun—because the use of the two methods is governed by the type of structure to be painted. The essence of all paint applications is to obtain a uniform layer of protective material, sufficiently thick to form a film which is impervious to moisture, liquids, or gases and which will give good hiding power when painting over darker coatings.

In the spray gun a stream of liquid paint is forced to emerge under pressure from a nozzle in front of the gun. Also, in front of the gun an air cap is located and a blast of air is directed into the stream of liquid paint in order to atomize or break it up to form a suitable spray pattern. Because of the high speed at which the liquid is atomized a large area of a steel structure can be covered in a short time. The proper application depends on certain techniques in handling the spray gun and the use of proper fluid tips and air caps to form the desired pattern.

An efficient operator with good equipment, properly mixed and screened paint, and uniform air pressures, should be able to produce the desired film of paint with one pass over the surface. Uneveness, sags and runs can be avoided if the gun is manipulated so as to pull the trigger just after the spray gun stroke is begun, continue the stroke across the surface in a parallel motion, and release the trigger just before the stroke is completed.

It will be obvious to anyone with even a slight knowledge of spray painting methods that it is impossible to work the stream of paint into cracks, crevices and blind spots without building up excess thicknesses of paint film. Where these conditions abound, brushing is done in conjunction with spraying so as to take care of these contingencies.

Painting steel by brushing calls for correct handling to the same extent as does spraying. Flat brushes which have been well taken care of insofar as cleaning and storing are concerned, and with at least 4½-in long uniform bristles, are necessary to get uniform coatings on large unbroken surfaces. Round or oval brushes are generally considered more suitable for rivets, bolts, irregular surfaces and rough or pitted steel.

In brushing paint, the technique is to transfer as much of the paint from the brush to the surface as is needed to obtain a film of uniform thickness without excessive brushing. It is necessary to brush lightly at all times and at the end of the brushing to use a lighter stroke to smooth up brush marks and laps.

The type of coating being applied will have much weight in determining the method of application. Some fast-drying synthetic vehicles will not allow for any brushing after the first spread is made. Any attempt to touch up or smooth the surface will only pile up the paint film. Here, a gun will perform well. Heavy viscosity coatings are more adaptable to spray-gun application than by brushing or daubing.

The selection of air pressures for spray painting is also of the utmost importance. If the air pressure is excessive, the paint will fog and be wasted to the atmosphere. Aside from the resulting loss of paint, extensive damage can be done to surrounding buildings, automobiles or other vehicles as the paint fog will travel great distances depending on the air velocity. Such happenings usually are not apparent to the operator until the damage is done.

The amount of equipment required for spray painting may be a deterrent to its use. Air compressors—usually gasoline powered—hoses, pressure pots, guns, moisture traps, and sometimes more extensive scaffolding, are the general run. This equipment must be maintained properly under adverse conditions. At the end of the day, or whenever conditions warrant it, spray guns, pots, and hoses must be thoroughly cleaned so that no paint or coatings will dry on the in-

YOURS FREE

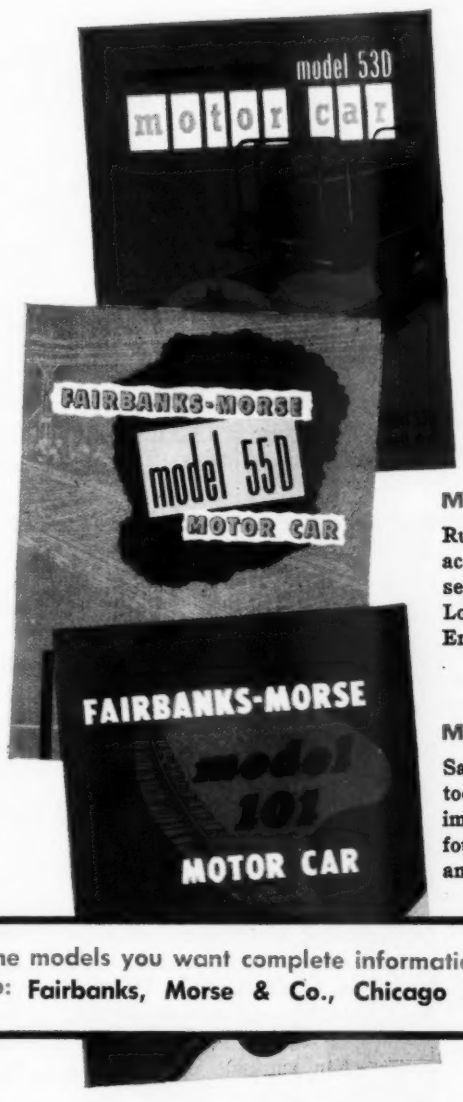
Send for catalog on the F-M Motor Cars that fit your maintenance and inspection needs. Each catalog contains the complete information you need when considering rail car purchases for this year.

design advantages

operating features

detailed specifications

complete accessories



MODEL 53D ☐

Double-duty performer that is full-sized standard section car and yet light enough for minimum crew to handle easily, safely.

MODEL 55 ☐

Rugged and powerful car that accommodates up to a six-man section crew and equipment. Low center of gravity. Enclosed seat sides.

MODEL 101 ☐

Safest inspection car on the rails today. Four forward speeds, immediate reverse, four-wheel brakes, wheel silencers and low lifting weight.

Check the models you want complete information on, and write to: **Fairbanks, Morse & Co., Chicago 5, Illinois.**

FAIRBANKS-MORSE

a name worth remembering when you want the BEST

RAIL CARS & RAILROAD EQUIPMENT • DIESEL LOCOMOTIVES & ENGINES • ELECTRICAL MACHINERY • PUMPS • SCALES • WATER SERVICE EQUIPMENT • MAGNETOS

terior surfaces. Nothing is so exasperating to an operator when spraying as to have a clogged or sputtering gun. The painted surfaces can be appalling when intermittent clogging occurs. Leakage of paint around the gun, at the hoses, or at the tank is not only wasteful of material but also discouraging to a good operator because he soon becomes covered with paint.

Considerable more can be said about both methods of painting, but with these few fundamentals the supervisor in charge of paint programs can weigh the many factors stated as well as those peculiar to the specific job when deciding which method of painting he will use.

Substitute for tie plugs

To what degree is it possible to do away with the use of wood tie plugs in rail-renewal work? What are the advantages and disadvantages of substitute materials and compounds? Explain.

Plugs OK—properly applied

By R. H. GILKEY
Division Engineer
Central of Georgia
Savannah, Ga.

We use creosoted wood plugs in our rail-renewal work as we think the plug assists in holding the spike tighter. The plugs are inserted prior to adzing the tie. But the plug must be driven into the hole securely and then cleanly cut off with the adzer. The plug also helps to fill the spike hole thereby preventing decay caused by water getting into the hole.

If a tie, however, is one that is marked for renewal by the surfacing gang it would not be advisable to insert plugs in that particular tie. After the adzers pass over the tie, the adzed portion of the tie is thoroughly sprayed with creosote oil before the tie plate is located.

Plugs a waste of money

By JACK K. RUSSELL
Happy, Tex.

As I have worked on these types of gangs, I feel there is a great expense in using wood tie plugs. The railroads never recover the cost of the plugs, let alone the labor expended in using same. The main reason for this, as I see it, is that often a railroad will surface after relays and take a good number of plugged ties out of track. Also, ties are often thin in depth and I have found cases where larger spikes have driven plugs through the bottoms of the ties into ballast. Also, lots of laborers break the plug before it gets to the bottom of the spike hole.

Many ties have rust in the spike holes that doesn't come out with the spike when it is pulled. Also, a good number of holes have rotted in ties to the extent that the plugs will not fill. I think that if some kind of liquid plug and tie preserver were to be applied in relay work as well as new and bigger spikes, the railroads would get their money's worth.

Leasing trucks for M/W work

To what extent is it practicable for M/W forces to use trucks leased from commercial truck-leasing concerns? What are the advantages and disadvantages of leasing trucks as compared to purchase and ownership of such vehicles? Explain.

Depends upon conditions

By T. S. BEAN
Gen. Supt., M/W Shops & Equip.
Southern Pacific
San Francisco, Calif.

There are many different opinions on the subject of ownership versus leasing of truck equipment. The policies which are to be followed in fleet operation, if the operation is to be reasonably economical, must be founded on the basis of the specific operation conditions and the type of equipment the respective fleet owner might require.

Whether or not leasing truck equipment is more economical than ownership is of course dependent upon how much the cost per mile of operation would be to the respective fleet owner.

In the event the fleet owner is in a position to adopt certain policies such as preventive maintenance program and is able to keep cost per mile operation within required limits, it is possible to realize considerable savings in owning truck equipment rather than leasing. We are now speaking in terms of standard truck equipment such as stake and flat bed trucks and pickups. However, we have found it very desirable to equip trucks with bodies, winches, booms, metal canopies, collapsible seats and many other accessories as required for the specific duties they must perform.

In our operation, in the greater percentage of instances, it is desirable to utilize our truck equipment as a piece of work equipment, as well as for use in transporting crews and materials, and it is therefore necessary that they be equipped with special bodies, power winches and accessories to conform with their respective assignments.

It would be very impractical to attempt rental of specialized equipment of this nature, because rental costs would be prohibitive. It is also impractical to lease the truck cab and chassis only and install bodies and accessories required on them.

In summing up our views, it is again pointed out that the practicability of leasing truck equipment for M. of W. forces is entirely dependent on the particular operating conditions and the type of equipment it desired to have.

What type screening for windows?

What are the relative advantages and disadvantages of the various window screening materials on the market today, such as plastic, aluminum, copper, etc? How do they compare in first cost and maintenance cost? Explain.

Aluminum outlasts, outperforms

By A. H. RINGHOLM
Manager
Railroad Industry Sales
Kaiser Aluminum & Chemical Sales, Inc.
Chicago

Aluminum has certain definite advantages over other window-screening materials, such as copper (bronze), plastics, and galvanized steel. While it costs approximately a fourth more than plastic and half again as much as galvanized wire screening, aluminum is an economical material when first cost, maintenance, and length of life are taken into consideration.

Advantages of aluminum wire screening include corrosion resistance, long life, ease of cleaning, good light and air passage, attractive appearance, and compatibility with other aluminum door and window components.

Temperature changes cause no serious trouble with aluminum screening. It does not bulge, buckle, or form ripples in the hot sun. In extreme cold, it will neither break, nor distort the frame. When exposed to weather, its oxide forms an almost invisible, thin protective coating. Aluminum will not stain frames, sills or siding and it cannot burn or char.

"ShadeScreen," a louvred-type screen, offers a number of advantages. It keeps rooms 10 deg to 15 deg cooler yet provides insect protection like conventional wire screening. Tiny louvres block direct sunlight—eliminating glare but allowing full visibility outward through the screen. Besides giving greater eye comfort from the elimination of the glare, ShadeScreen affords protection against fading of drapes, carpeting and other furnishings. Where air conditioning is installed, ShadeScreen substantially reduces the load on the equipment in most cases, thus permitting the use of smaller cooling units.

Prevention of slime and algae deposits

What methods can be used most effectively to prevent the formation of slime and algae deposits in recirculating-type water cooling systems? Explain.

Chemical treatment imperative

By T. A. TENNYSON
Chief Chemist
St. Louis Southwestern
Mt. Pleasant, Tex.

A properly designed recirculating-type cooling-water system can function as it should only if the correct circulation rate of the water is maintained and the heat exchange surfaces are kept free of insulating coatings. The formation of scale from the inorganic salts dissolved in the water, corrosion of the metal parts of the system (which subsequently results in a concentration of insoluble inorganic materials), and the varieties of microsized plant and animal life generally included in the term "algae and slime" along with dirt from the atmosphere, can be responsible, separately or in combination, for failure of the system due to impairment of circulation or fouling of the exchange surfaces.

Although cooling systems can be operated after a fashion by frequent cleaning to remove deposits, this is expensive and often very nearly impossible because of the inaccessibility of many of the parts which need cleaning. In addition, such cleaning may be necessary at the time equipment is most needed and this type of operation can result in periods of low efficiency operation as well as possible damage from the cleaning agents and methods involved. Loss of equipment use during shut-down time is also a factor to be considered. Thus, it is logical that the best operation can be obtained by prevention of scale, organic deposits and corrosion of cooling system combined with efforts to eliminate or reduce to a minimum any sources of dirt.

Recirculating-type, cooling-water systems can be generally divided into closed systems and open systems, depending on the means used to remove the heat from the circulating water which has been accumulated in its normal function as a coolant. On railroads, closed systems are found in diesel engines and various other internal combustion engines and chemical controls have been in use for some time. In closed systems very little water is lost by evaporation and little if any light comes in contact with the water.

The increased use of air conditioning on railroad property has brought into wider use open-type cooling systems in which the cooling water is subjected to both light and air in cooling towers and is subject to considerable evaporation. Results of intensive study of problems connected with the operation of such cooling-water systems, with methods of control, can be found in the Proceedings of the American Railway Engineering Association, Volumes 56 and 57 for 1955 and 1956, respectively. The following remarks will be directed mainly toward the open-type cooling systems.

Only by chemical means can slime and algae growth be continuously controlled effectively and economically in open-type cooling systems and the control of such growth is very important to the proper operation of the system. The materials most widely used are easy to apply and relatively inexpensive but their use is not always successful if not followed up by trained personnel. Also, while some of the chemicals available appear to approach "universal" ability, there are some which are more specific for certain forms of plant and animal life than others.

Before starting the use of such materials, a study should be made to determine the kinds of micro-life most commonly involved. The most widely used chemicals are toxic to man and other animal life. This must be considered. Although a number

ORTON

the most *POWERFUL*
name in CRANES
and *PILE DRIVERS*

An ORTON Pile Driver *built to specification* hoists, rotates, travels and operates the pile-driver leads, powered by a GM diesel engine with fluid torque converter. Self propelled at 24 mph on level track. Easily negotiates 5% grade; pulls 10 loaded cars weighing 70 tons on level—or 1 such car on 4% grade. Hydraulic pumps and auger attachments. Ask for catalog No. 90.

All ORTON cranes operate on STRAIGHT DIESEL POWER. This enables ORTON to give a 10-year guarantee on travel gears without limitation due to accident, derailment, misuse or other cause. Idles at 600 rpm instead of 1800; reduces engine wear immensely; reduces fuel consumption to about ¾ of diesel electric operation. No danger of setting fire to combustible material on road beds. Moisture—even flood waters, won't immobilize an ORTON straight diesel machine.

ORTON CRANE & SHOVEL CO., 608 S. Dearborn St., Chicago 5, Ill.

An ORTON *Combination* PILE DRIVER, 160-ton DIESEL WRECKER and BRIDGE DERRICK *built to specification*. Pendent pile driver leads permit batter in both directions. Can be equipped for use with air or diesel-operated hammer. Above: in use as a pile driver; large photo at left: same machine as a wrecker. Ask for catalog No. 89.

What's the answer?

of chemicals can be used, this discussion will be limited to those which have been used with success by us, or are known to us in this territory.

Chlorine is readily available in liquid form and it is toxic to algae and bacteria with as little as 0.5 part per million often required to do the job and it is one of the first chemicals which comes to mind for such use. It is stable in neutral, acid or alkaline waters and its presence is easily determined by simple methods. The hazards connected with handling chlorine have been reduced somewhat by improved equipment, but the cost of such equipment may make it prohibitive for small installations.

Since chlorine is volatile and reacts with organic matter it must be constantly replaced when used in open systems where the cooling water comes in contact with air. Certain organic and inorganic compounds which release chlorine in water solution can be used, as well as combinations of chlorine and ammonia, to take advantage of the toxic ability of chlorine and release it over a longer period of time. Chlorine is sometimes "shot-fed," maintaining several parts per million residual for short periods of time at 24-hr or longer intervals.

Copper salts have been used for a long time in the control of algae, particularly copper sulfate, and are effective to some strains which are resistant to chlorine. Also, they are not lost through evaporation or contact with air in the cooling tower. The activity of these materials is based on the copper ion so that copper sulfate, copper nitrate, copper citrate, etc., are equally effective when used in amounts to produce equivalent copper ion concentration in the water. Dosages range from less than a part per million to as much as 10 parts per million of copper ion, depending on the strain of algae.

The copper salts readily dissolve in water which has a pH of less than 8.5, but the copper ion has a tendency to precipitate at higher pH values, causing loss of effectiveness. This is one factor which limits the use of copper sulfate in cooling systems where higher pH values may be desirable for scale and corrosion control. Copper citrate is apparently

What's the answer?

more stable than copper sulfate in alkaline waters and good control of slime has been obtained by shot-feeding 10 to 30 parts per million of copper citrate about once a week. The copper ion is toxic to fish and there may be cases where this will limit the use of copper salts.

Sodium pentachlorophenate, which is a synthetic algaecide, has proved particularly effective in the control of slime and algae in our cooling towers and the recirculating systems of air conditioners both large and small. This material is stable in alkaline waters and in the presence of water treatment chemicals commonly used and it is a readily soluble sodium salt. It is relatively inexpensive and control of slime and algae can be accomplished by adding the full dose of this chemical at one time. The amount of sodium pentachlorophenate needed depends on the volume of the cooling system (tower pan, lines, condenser, etc.). Usually 3 oz (avoirdupois) in 100 gal of water is an effective dose to be applied once a month.

The chemical is not lost through evaporation or by contact with air in the cooling tower. If growth of algae or slime is observed in the cooling tower between applications the growth can ordinarily be brought under control by putting in the dose more frequently or the basic dose of sodium pentachlorophenate can be varied to suit the conditions.

The sodium pentachlorophenate is available in powder or various sizes of briquetted forms and in many proprietary cooling water compositions. It can be put directly into the tower pan or injected into the lines by means of suitable feeders. Sodium pentachlorophenate and its solutions are irritating to the skins and mucous membranes of some individuals and are somewhat toxic to man and other animals. This chemical has also been found effective in controlling slime growth in evaporative coolers such as are used for home and office cooling in certain localities.

As previously mentioned, the above list does not include all of the effective materials available or combinations and means of application for the prevention of slim and algae growths in recirculating-type water-

What's the answer?

cooling systems. Sometimes, combintions of these which have been mentioned, either applied together or in rotation, will prove more effective than any one alone. Conditions have been noted where seasonal variation of the chemical used has been necessary. The prevention of slime and algae growth is at its best under a scientific approach, and adequate laboratory control can contribute a great deal to good operation of cooling systems.

Several methods applicable

By Louis E. Talbot
Chief Chemist
Texas & Pacific
Ft. Worth, Tex.

The three main groups of organisms which may give trouble in recirculating cooling water systems are: (1) Algae; (2) bacteria; (3) fungi. Some of the methods used for the prevention of slime and algae in cooling systems are as follows:

Chlorine has been used to some extent and is usually shot-fed to give a residual of several parts per million for 30-min periods at 24-hr intervals. The disadvantage of using chlorine is that it is lost through aeration in the cooling tower.

Copper sulfate is used in the range of 0.1 to 0.5 parts per million. It is very effective for algae control; however, it precipitates out at pH values of 8.5 and over and should not be used in high alkaline waters.

Copper citrate is sometimes used instead of copper sulfate because it is stable and highly soluble in alkaline waters. It is effective when used at 10 to 30 parts per million added to the cooling tower at intervals of two to seven days.

Sodium pentachlorophenate affords good control when it is added in the amount of 200 parts per million to the circulating water. The combining of the phenolic compounds with the copper salts produces good results using 60 parts per million of the combination instead of the 200 ppm of the phenolic compounds alone. The blowdown discharge should be carefully regulated when using the phenolic compounds because of their toxicity to fish and animals.

Quaternary ammonium compounds are of rather recent development. They are very effective against slime and algae growth when used in relatively high concentrations.

Although not proven conclusively, it appears that certain types of algae and slime become immune to some of the above chemicals. For this reason, it might be advisable to change the type of control every two or three years.

It is much easier to prevent the formation of slime and algae than to control it once it has formed; therefore, it is recommended that the system be thoroughly cleaned before the addition of any treatment. Once the system is cleaned, and the treatment started, a weekly inspection by a competent chemist is highly advisable.

Biographical briefs (cont'd)

igan and joined the Grand Trunk Western in 1919 as chief draftsman in the structural department. He subsequently served as assistant engineer of general structures design and as bridge engineer—design and construction until 1947 when he was promoted to chief engineer. Mr. Laird is now engaged in private consulting practice.

John G. Fry, 43, who was recently promoted to chief engineer of the Coast Lines of the Atchison, Topeka & Santa Fe at Los Angeles (*RT&S,* June, p. 24), graduated from Notre Dame and joined the Santa Fe in October 1936 as a chainman at Newton, Kan. He worked in various capacities until March 1, 1943, when he was named transportation inspector at Chanute and in December 1945 was transferred to Arkansas City, Kan. In February 1950 he was promoted to division engineer at Temple, Tex., and in October 1950 was named district engineer at Topeka, Kan. On August 16, 1951, he was appointed regional engineer at Los Angeles, being promoted to assistant chief engineer there on November 1, 1956—the position he held at the time of his recent promotion.

L. H. Powell, 66, who recently retired as chief engineer of the Santa Fe's Coast Lines at Los Angeles (*RT&S,* June, p. 24), graduated from Texas A&M and joined the Santa Fe in 1909 as a chainman. He served subsequently as computer, computer draftsman, accountant, assistant engineer, assistant to chief engineer system, until October 1949 when he was named chief engineer of the Coast Line at Los Angeles.

John W. Holm, who was recently named roadmaster for the Reserve Mining Company at Babbitt, Minn., joined the Duluth, Missabe & Iron Range in 1950 as a section laborer. In 1952 he served with a contractor and in September 1955 joined the Reserve Mining Company as section foreman—the position he held prior to his recent promotion.

James G. Watwood, 24, who was recently named assistant superintendent of structures and materials on the Central of Georgia (*RT&S,* April, p. 78), was an instructor at the Alabama Polytechnic Institute prior to his joining the CofGa in June 1956. He gradauted from API in 1953, after which he served two years in the Air Force.

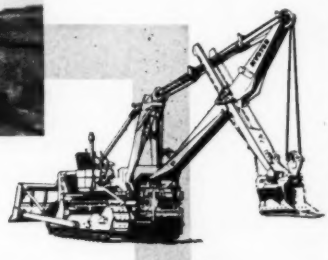
W. I. Stadter, 48, recently named assistant superintendent maintenance of way

John G. Fry
Santa Fe

L. H. Powell
Santa Fe

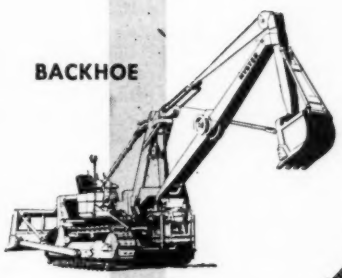
HYSTAWAY® EXCAVATOR-CRANE

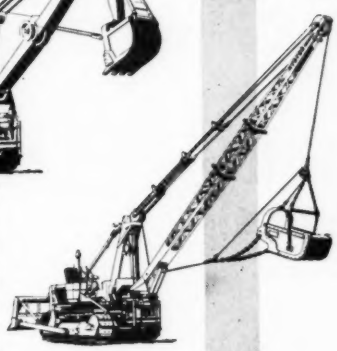
TODAY'S MOST *Versatile* RAILWAY MAINTENANCE MACHINE



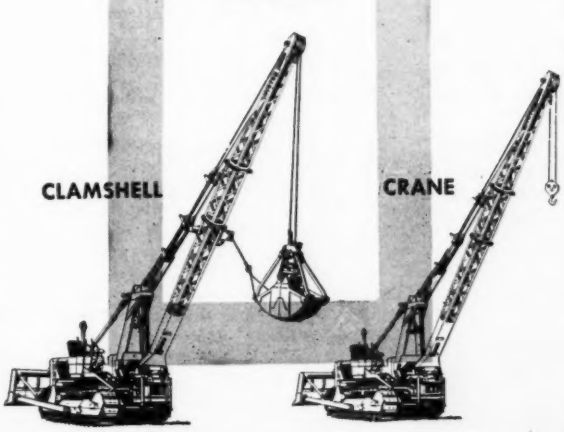
SHOVEL

BACKHOE





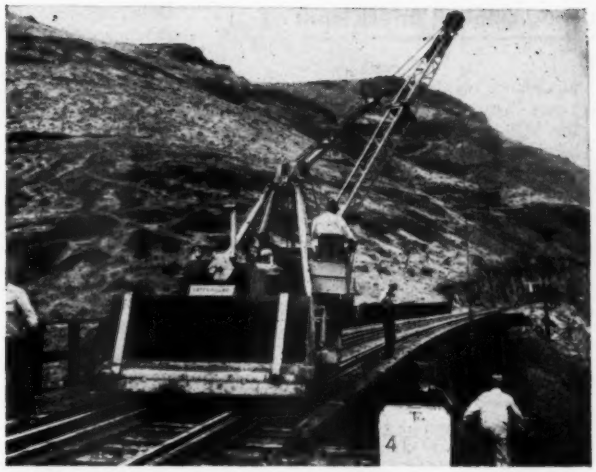
DRAGLINE



CLAMSHELL

CRANE

Hystaway is a registered trademark of Hyster® Company
Caterpillar is a registered trademark of Caterpillar Tractor Co.



HYSTAWAY, mounted on Caterpillar D8, D7 or D6 tractor, provides an all-purpose machine that can handle all these maintenance and construction jobs:

Loading and Unloading Rail
Laying Rail
Handling Construction Materials
Handling Ballast
Lifting Equipment Off Track

or as a bulldozer—
Ditching and Filling
Grading, Clearing

These are only a few of the jobs that make Hystaway the ideal Right-of-way maintenance machine.

Exclusive **HYSTAWAY** *advantages:*

Complete Track-Type Tractor Mobility
Moves on or off track quickly; travels equally well on the track, or over rough ground.

No Tail Swing
Can work from inside gondola car in confined areas anywhere. 240° boom swing provides a wide working range.

Powered by Tractor Diesel Engine means faster, more efficient performance.

Conventional Lever-Bank Controls
Easy to operate from convenient adjustable operator's seat.

Converts Fast, for Other Types of Service
Optional Front End Equipment
Gives you full-production—Shovel, Backhoe, Dragline, Clamshell or Crane.

Bulldozer
Ready at all times for light dozing. With the boom removed, it's ready for high production and heavy dozing jobs.

Ask your Caterpillar-Hyster Dealer for further details.

HYSTER COMPANY

HYSTAWAY FOR RAILROAD CONSTRUCTION AND MAINTENANCE

HYSTER

2902-56 N. E. CLACKAMAS STREET.....PORTLAND 8, OREGON
1802-56 N. ADAMS STREET..... PEORIA 1, ILLINOIS
HYSTER N.V. .....NIJMEGEN, THE NETHERLANDS
FACTORIES: Portland, Ore.; Danville, Ill.; Peoria, Ill.; Nijmegen, The Netherlands.

Biographical briefs (cont'd)

equipment on the Missouri Pacific at St. Louis, Mo., (*RT&S*, May, p.32), joined the MP in 1929 in bridge and building service in Kansas and Colorado. He served subsequently as motorcar repairman helper and motorcar repairman until 1945 when he was named supervisor M/W machines at Kansas City.

Robert K. Pattison, 35, recently appointed assistant superintendent on the New York Central at Indianapolis, Ind., (*RT&S*, May, p.32), graduated from the University of Illinois and joined the NYC in 1947 as an inspector at Cleveland, Ohio. He served subsequently as assistant supervisor of bridges and buildings at Erie, Pa., and as assistant supervisor of track until 1952, when he was promoted to assistant division engineer at Detroit, Mich. After serving as acting trainmaster at Chicago, he was named division engineer at Mattoon, Ill., in January of last year—the position he held at the time of his recent promotion.

Roland H. Tweedie, 49, recently appointed roadmaster on the Bangor & Aroostook at Oakfield, Me., (*RT&S*, May, p.32), joined the B&A in May 1930. He was serving as section foreman at North Bangor when he was promoted to his new position.

Robert F. Lawson, recently appointed district methods engineer on the New York Central at Indianapolis, Ind., (*RT&S*, May, p.32), graduated from Ohio State University and joined the NYC on December 1, 1940, as an assistant engineer at Springfield, Ohio. He served in that capacity at Mattoon, Ill., and at Indianapolis and, in 1946, was named assistant bridge and building supervisor at Galion, Ohio. He served subsequently as office engineer at Springfield, Ohio, and as assistant division engineer until March 1955 when he was promoted to division engineer at Mattoon, Ill. He was serving as division engineer at Chicago at the time of his recent promotion.

Association News

Roadmasters' Association; Bridge & Building Association

Program committees of both associations have practically completed plans for the annual conventions which will be held concurrently at the Conrad Hilton Hotel, Chicago, September 23-25.

In general, the separate sessions of the two associations will consist of the presentation of committee reports, most of which have now been completed.

Final plans for the bridge and building convention were made at a meeting of the Executive committee held at Chicago on June 24 under the direction of R. R. Gunderson, president of the association and engineer maintenance of way of the Western Maryland. The Executive committee of the Roadmasters' Association held its final meeting at Chicago on July 15, which was in charge of J. E. Griffith, president of the association and assistant chief engineer maintenance of way and structures of the Southern's Central Lines.

A "skeleton" program follows:

Monday, September 23

10:00 am—12:00 noon—Joint session
- Greetings from representatives of other associations
- Address by R. G. May, vice-president Operations and Maintenance Department, AAR
- Address by D. W. Brosnan, vice-president, Southern Railway

2:00—4:00 pm—Both associations will hold separate sessions.

Tuesday, September 24

9:30 am—12:00 noon—Both associations will hold separate sessions

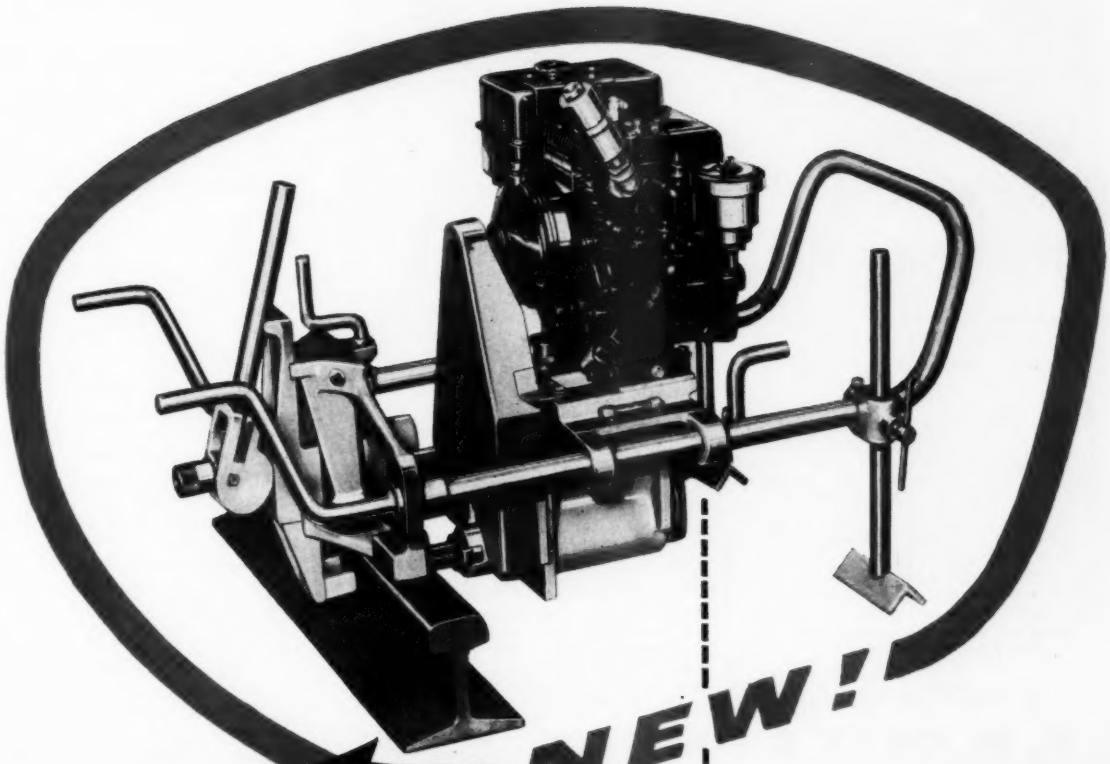
2:00 pm—4:00 pm—Joint session
- Address by Donald M. Smith, regional director, Railroad Retirement Board
- Address by W. A. Grotz, president, Western Maryland

6:30 pm—Annual banquet with supply associations

Wednesday, September 25

9:30 am—12:00 noon—Both associations will hold separate sessions

1:30 pm—5:00 pm—Members of both associations will make inspection trip to AAR research laboratories.



NEW!

RACINE® portable rail drill

WITH AUTOMATIC POWER FEED

Here is RACINE'S new Portable RAIL DRILL — completely new simplified design. A precision machine built for rugged in-track service. Once this machine is set up for specific rail size, it will drill hole after hole without further adjustment. Through an exclusive RACINE compensating pressure arrangement, feed of drill varies automatically, depending on sharpness of bit and hardness of rail.

★ **READILY PORTABLE**
Simple quick-acting cam actuated clamp holds machine in position and allows rapid removal of machine from track.

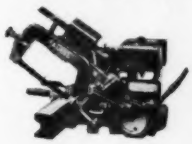
★ **EASY TO HANDLE**
Carrier guard protects mechanism and provides a convenient carrying handle for lifting machine. Weighs only 165 pounds.

★ **EASY TO OPERATE**
Clamping device automatically aligns machine. Drill is always properly positioned and securely held in place. Machine is leveled by two quick-acting ground contacts and spirit level.

★ **POWERFUL, FAST**
Powered by easy-starting 2¾ H.P. four-cycle gasoline engine. Drives drill chuck at a 30 to 1 reduction providing more than adequate power.

★ **PRECISE, EFFICIENT**
Holes can be drilled cleanly and accurately through any rail web in less than two minutes. Quick acting drill holder provides easy drill changing. Drill holder is designed to utilize full length of drill shank.

OTHER RACINE PORTABLE RAIL TOOLS



RAIL SAW
Portable rail cropping machine—gas engine driven. Saves time—reduces rail failures.

UNIT TAMPER
Gas engine driven. Produces 1160 high velocity blows per minute. Weighs only 60 lbs.

HYDRA QUAD MULTIPLE TAMPER
Four tampers operated by one man. Hydraulically powered by 15 H.P. gas engine. Easy removal from track.

RACINE

Write today for complete descriptive literature and prices on any of the above Racine Portable Rail Machines.

RACINE HYDRAULICS & MACHINERY, INC.
2038 Albert Street

Supply Trade News

National Cylinder Gas gets rights to Schlatter welder

Exclusive U. S. manufacturing rights have been acquired by the National Cylinder Gas Co., to the Schlatter machine for butt-welding rails into continuous lengths by the electric flash method, it was announced by **Charles J. Haines,** president. The arrangement also covers manufacturing rights in Canada, Mexico, Central America and most of South America.

License agreements to make the patented automatic rail welder have been signed with **H. A. Schlatter AG.,** Swiss manufacturer of resistance welding machines, Mr. Haines said. Work is under way to establish production of the entire unit in this country.

Robert A. Baer, railway equipment sales consultant, has joined National Cylinder Gas and will head the company's activities in handling the Schlatter welder. His headquarters will be at Chicago.

Acquisition of manufacturing rights to the Swiss equipment marks the first move into the specialized field of rail-joint welding for National Cylinder Gas, a large producer of welding and cutting equipment and industrial gases. The company will make the machine available to American railroads on either a sale or a lease-and-service arrangement, Mr. Haines said.

The Schlatter resistance butt welder can perform at a rate of 15 rail joint welds per hour and is capable of welding standard-length rails into a continuous quarter-mile length in less than two and one-quarter hours, according to company spokesmen.

The Schlatter rail welder, according to company representatives, applies a maximum of electric current for a minimum of time to steel rail ends fitted firmly together in the machine. This welding heat is followed immediately by a hammer-like impact at up to 60 tons upsetting pressure that squeezes molten metal out of the welding zone and produces a butt-weld without subsequent annealing. It is claimed that no more than four minutes is required to put the rail sections in the machine, weld them, automatically shear off the weld burr, remove them and be ready for the next rail.

The entire unit—welder, diesel-electric power unit and auxiliaries—occupies three full-size railway freight cars.

Robert A. Baer
National Cylinder Gas

G. E. Schmidt
Koehring

ARMCO DRAINAGE & METAL PRODUCTS—**Robert D. Klemme** has been appointed sales representative with headquarters at Boston, Mass.

R. H. BOGLE COMPANY—**James M. Brasfield** has been appointed sales engineer at Alexandria, Va. **William C. Parrish, Jr.,** service engineer, has been named plant superintendent at Alexandria succeeding **R. E. Stuart,** who died recently.

A. M. BYERS COMPANY—**Harry R. Rowland,** assistant general manager of sales, has been elected vice-president of wrought iron sales, with headquarters at Pittsburgh, Pa. **Chester W. Leschenko** has been assigned as field service engineer to the firm's Pacific Coast division.

CATERPILLAR TRACTOR COMPANY—**John E. Pilon** has been appointed district representative of the firm's southwest sales division with headquarters at San Francisco. **Herbert J. Benzel** has been appointed earthmoving representative in the Plains sales division, servicing dealers and customers in Montana, Wyoming, and North and South Dakota.

DUFF-NORTON CO. — **Joseph C. Gruber,** manager of the shipping department, has been promoted to traffic manager of the firm's jack division with headquarters at Pittsburgh.

FRED W. HOLSTEIN—**Mr. Holstein** has established himself as a manufacturer's representative with headquarters at Hopatcong, N. J., representing the following companies in the south and southeast: **The Rails Company; Mall Tool Division, Remington Arms, Inc.; Esbury Graphite Mills Co.; Chemical Detergents Company; Brunner & Lay;** and the **T. Geo. Styles Company.**

KOEHRING COMPANY—**A. L. Dassler,** assistant chief engineer of the Koehring division at Milwaukee, has been promoted to chief engineer of that division. **Kenneth Johnson,** senior designer, has been promoted to assistant chief engineer, succeeding Mr. Dassler. **Arthur V. Cossens,** field service manager for the division, has been promoted to assistant sales manager. **George E. Schmidt,** sales representative, succeeds Mr. Cossens.

LEROI DIVISION—**Albert Feucht,** manager of manufacturing, has been named manager of the Cleveland branch of this division of the Westinghouse Air Brake Company. He succeeds **Louis E. Dondero,** who was recently named manager of LeRoi's main plant at West Allis, Wis.

LETOURNEAU-WESTINGHOUSE—**D. H. Mitchell,** district representative, has been pro-

A. V. Cossens
Koehring

D. H. Mitchell
LeTourneau-West.

The USS Solid Manganese Steel Self-Guarded Frog–

improves performance...minimizes maintenance...proves economical

The USS Self-Guarded Frog incorporates raised guards which have been cast integrally with the frog body. The guards guide the wheels past the frog point, eliminating the need for separate guardrails in the track opposite the frog. Therefore, a self-guarded frog is more economical than any other comparable frog that requires separate guardrails.

Cast in one piece from tough manganese steel, USS Self-Guarded Frogs are virtually maintenance-free, requiring no periodic body bolt tightening as do bolted rigid or railbound frogs and their guardrails. When used in freight classifying yards, terminals, and industrial yards, USS Solid Manganese Steel Self-Guarded Frogs will give many years of dependable service under rugged conditions. Hook twin frog plates shown under the frogs are also a specialty of United States Steel.

For complete data, photographs, and diagrams on the full line of USS Trackwork products, send for the free catalog, "USS TRACKWORK." Address your request to United States Steel Corporation, 525 William Penn Place, Pittsburgh 30, Pa. Also, you are invited to contact our engineers at any time for assistance in design.

USS **TRACKWORK**

UNITED STATES STEEL CORPORATION, PITTSBURGH • COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA. • UNITED STATES STEEL EXPORT COMPANY, NEW YORK

7-62

UNITED STATES STEEL

Robert A. Bussian
Matisa

Edward W. Stack
True Temper

moted to eastern sales manager with headquarters at Peoria, Ill., succeeding **James A. Vincent,** who recently resigned to become vice-president and general manager of Adams Construction Equipment Company, a new LeTourneau-Westinghouse distributorship being established in Florida.

MATISA EQUIPMENT CORPORATION—Robert A. Bussian, former executive assistant to the president and general counsel of the Ampro Corporation and Chicago subsidiaries of the General Precision Equipment Corporation, has been appointed executive vice-president. According to the firm, the decision to place Mr. Bussian in this post follows a year of research and development in an overall program planned to ". . . anticipate the demands for heavier, more efficient track equipment necessitated by the railroads' constantly increasing need for faster and smoother traffic on consistent schedules."

POOR & COMPANY—Will H. Reeves, Jr., 1080 Arcade Bldg., St. Louis, has become Southwestern agent of the **Rail Joint Company Division,** in addition to the **P & M Company** and the **Maintenance Equipment Company,** all of which are divisions of Poor & Company, according to an announcement by **Max K. Ruppert,** president and chief executive officer.

Sales and service of the Rail Joint Company Division will continue to be handled by **Harold L. Emerson,** 319 North 4th Street, St. Louis.

James A. Greer, formerly vice-president of the Rail Joint Company Division of Poor & Company, has been appointed executive assistant to the president of Poor & Company with headquarters at San Francisco. Mr. Greer will have administrative authority on special assignments from the president.

RAILS COMPANY—F. W. Holstein has been appointed sales representative on the southern railroads and other selected territory.

TRUE TEMPER CORPORATION—Edward W. Stack has been appointed northwestern sales manager for the firm's Railway Appliance division with headquarters in the St. Paul-Minneapolis area.

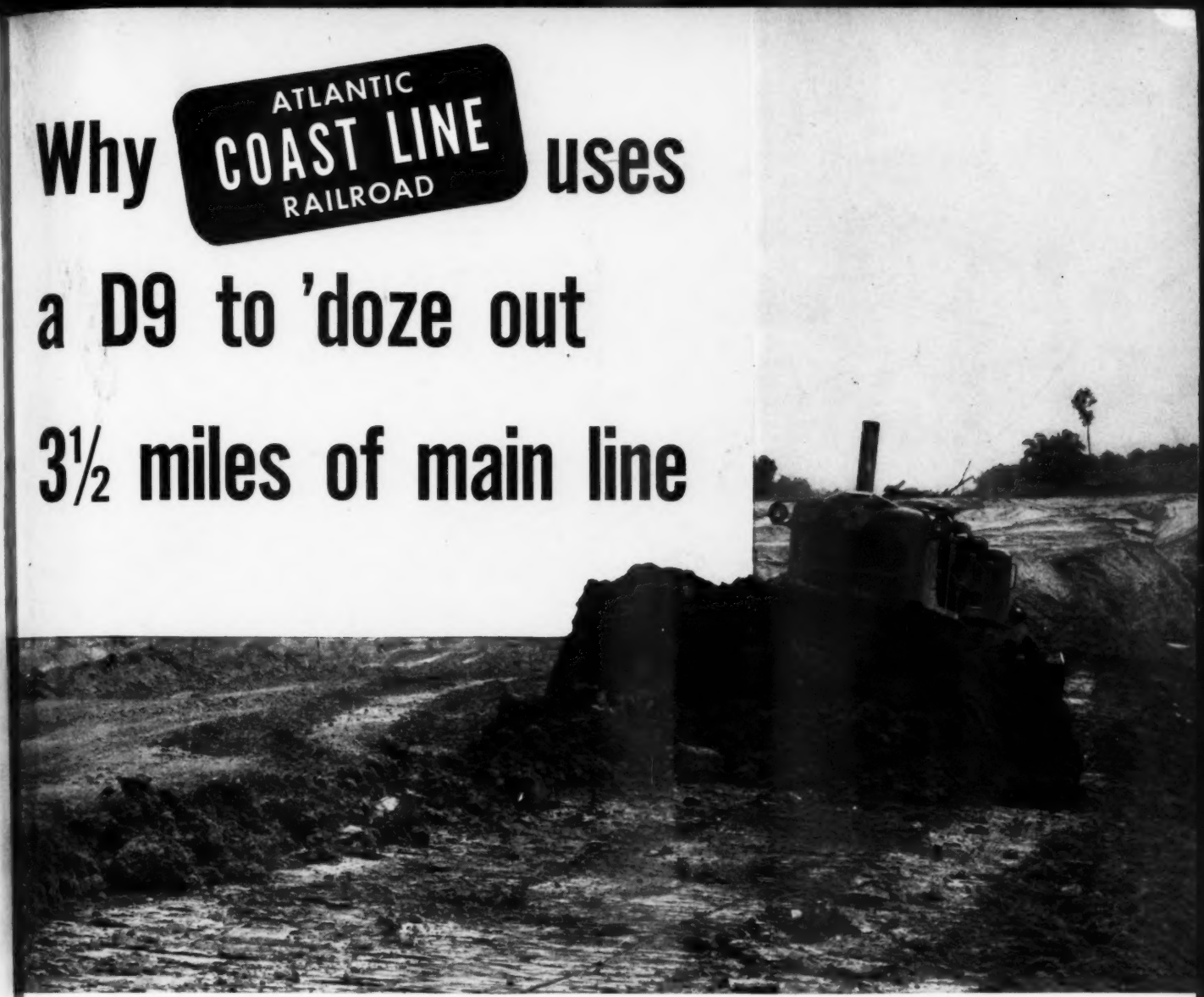
OBITUARY

George H. Riddle, sales engineer, rails and track accessories, Bethlehem Steel Company, died July 7 at Bethlehem, Pa.

ADVERTISERS IN THIS ISSUE

"This index is an editorial feature, maintained for the convenience of readers. It is not a part of the advertiser's contract and Railway Track & Structures assumes no responsibility for its correctness."

Why ATLANTIC COAST LINE RAILROAD uses a D9 to 'doze out 3½ miles of main line



For the big jobs, Atlantic Coast Line Railroad turns to one of its CAT* D9 Tractors to speed production, cut costs. The road has two of these giants. Here the D9 is grading a 60-foot fill, 1200 feet long, near Halifax, N. C.

No railroad construction job is too big for the giant D9. Equipped with a No. 9A Bulldozer, it can handle more than 10 cubic yards per pass. On a 50-foot haul, the big unit can handle 610 loose cubic yards per hour. And this figure can be increased as much as 75% on downhill 'dozing. Yet with hydraulic boosters which provide power for steering, braking and master clutches, it handles with small tractor ease.

And here is important news for railroads. Now you get even greater production from the Caterpillar D9 Tractor. Its Turbocharged engine output has been increased to 320 HP at the flywheel. And it's easy to service major components. Oil clutch or torque converter, transmission and steering clutches can be removed individually.

The D9 is a special favorite with operators. They like its "in-seat" starting, constant power drive for cable and hydraulic controls and excellent visibility.

The D9, with its mammoth blade capacity and high production output, was designed to save you important money. Your Caterpillar Dealer, who specializes in fast, efficient service and maintains a complete inventory of parts for you, is ready to demonstrate the King of the Crawlers. It's available with either long-lasting oil clutch or smooth torque converter drive. Call him today.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

NAME THE DATE... YOUR DEALER WILL DEMONSTRATE

One of the first ALL STEEL STRUCTURES...

Above left, oxygen cut being made in deck of old bridge. Directly above, old bridge is dwarfed by new lift span.

Goes the fast, efficient way of oxygen cutting

Sixty-three years old, and one of the first all steel structures built in the United States, the steam operated swing span, shown at left above, has carried up to 140,000 passengers a day in and out of New York's busy Manhattan Island. After suffering the mechanical ills of old age, this New York Central Railroad bridge was skillfully removed by using LINDE oxygen cutting.

The old bridge had a four track right of way with a girder structure separating tracks 1 and 3 from 2 and 4. After the tracks were taken up, the deck of the bridge was divided by a series of transverse and longitudinal cuts, and removed. Super structure beams were next to be cut off. Finally, the main side girders were cut into portable lengths and lowered away.

Oxygen and acetylene gases were supplied to the cutting torches by centrally located LINDE cylinders manifolded together.

No matter what your fabricating, repairing, or scrapping needs may be—LINDE can help you do the best job, in the least amount of time. Call your local LINDE representative for detailed information on LINDE'S processes—or write for specially prepared literature. Start saving now, do it today.

RAILROAD DEPARTMENT

LINDE COMPANY

DIVISION OF UNION CARBIDE CORPORATION

30 East 42nd Street, New York 17, New York

In Canada: LINDE COMPANY, Division of Union Carbide Canada Limited, Toronto

The familiar symbol of over forty years' service to the railroad industry.